



Attorney Docket No. 50277-1646

共11

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant(s): Gary HALLMARK et al.

Confirmation No.: 4042

Application No.: 09/757,399

## Group Art Unit: 2171

Filed: January 5, 2001

Examiner: Coby, F.

**Title: METHOD AND APPARATUS FOR  
IMPLEMENTING PARALLEL OPERATION  
IN A DATABASE MANAGEMENT SYSTEM**

Commissioner for Patents  
Washington, D.C. 20231

RECEIVED

OCT 24 2002

## DRAWING TRANSMITTAL LETTER

## Technology Center 2100

Sir:

Enclosed herewith please find:

\_\_\_\_\_ sheets of redlined drawing(s) which indicate proposed changes to the drawing(s). Upon approval of these proposed changes, formal drawing(s) will be submitted.

31 sheets of corrected formal drawing(s), as required by the Office Action dated July 17, 2002.

\_\_\_\_\_ sheets of corrected formal drawing(s), as required by the Notice of Patent Drawing(s) Objection (PTO-948) and approved in the Notice of Allowability dated \_\_\_\_\_.

\_\_\_\_\_ sheets of formal drawing(s). Please substitute these formal drawing(s) for the informal drawing(s) originally filed.

Examiner's approval of the entry of these drawings is respectfully requested. No new matter has been added.

Respectfully Submitted,

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Washington, D.C. 20231.

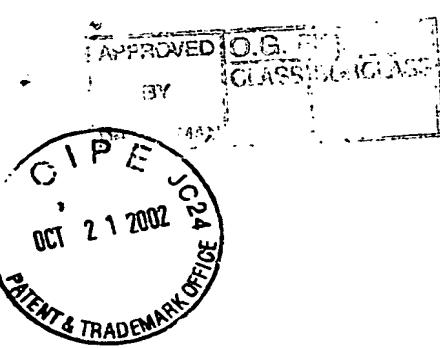
Date of Deposit: October 17, 2002

Typed Name: Lindy Vajretti

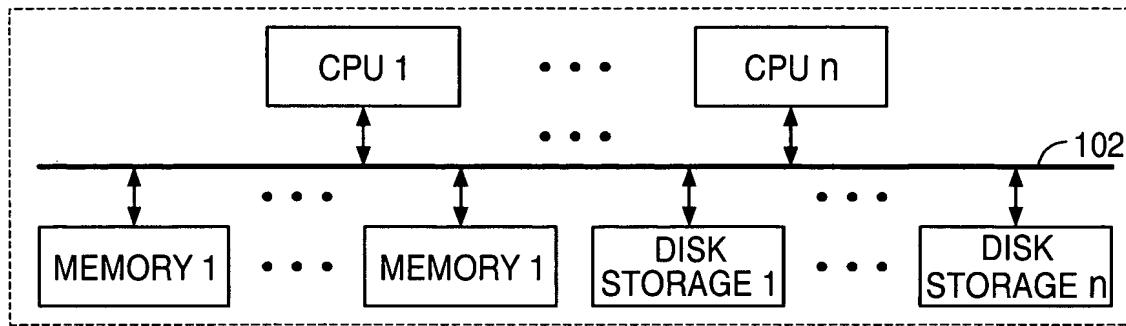
Signature:

By Christopher J. Brokaw  
Christopher J. Brokaw  
Attorney/Agent for Applicant(s)  
Reg. No. 45,620

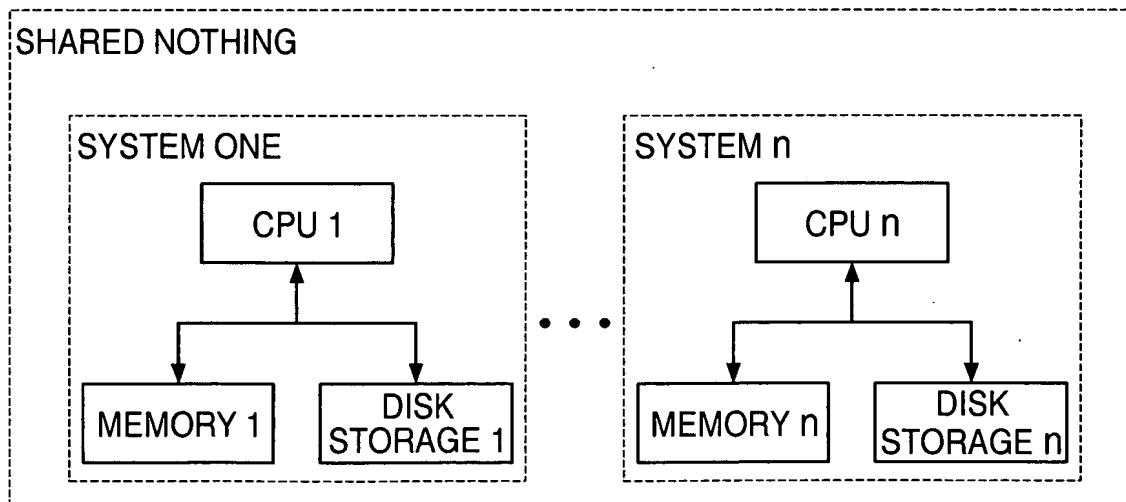
Date: October 17, 2002  
Telephone No.: (408) 414-1080 ext.



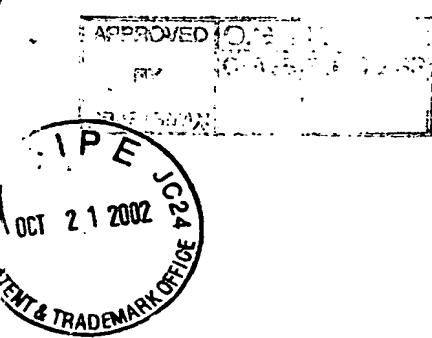
1/31



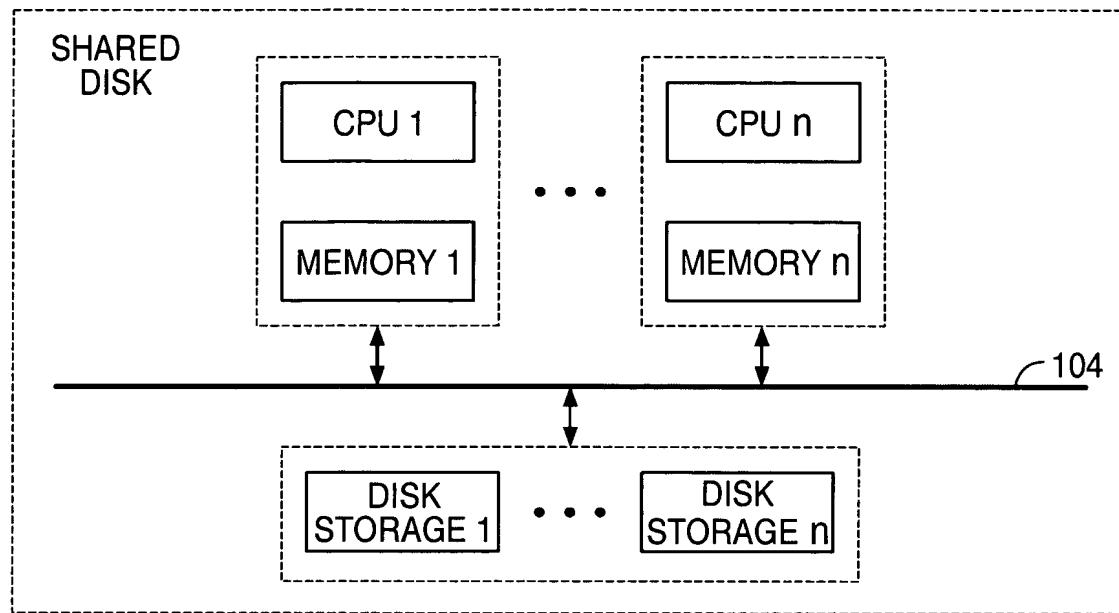
**FIG. 1A**  
(Prior Art)



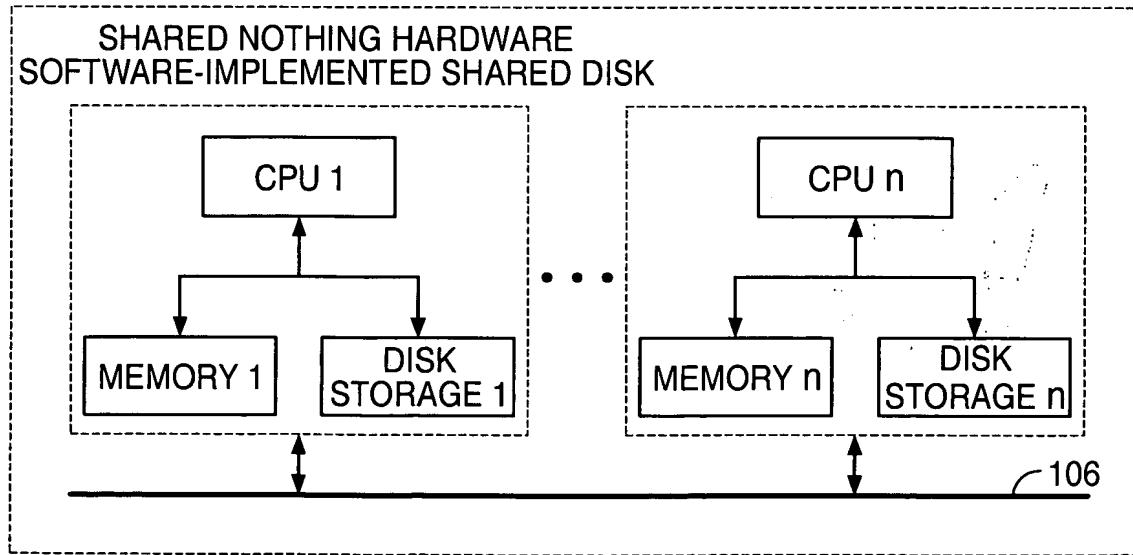
**FIG. 1B**  
(Prior Art)



2/31



**FIG. 1C**  
(Prior Art)



**FIG. 1D**  
(Prior Art)



3/31

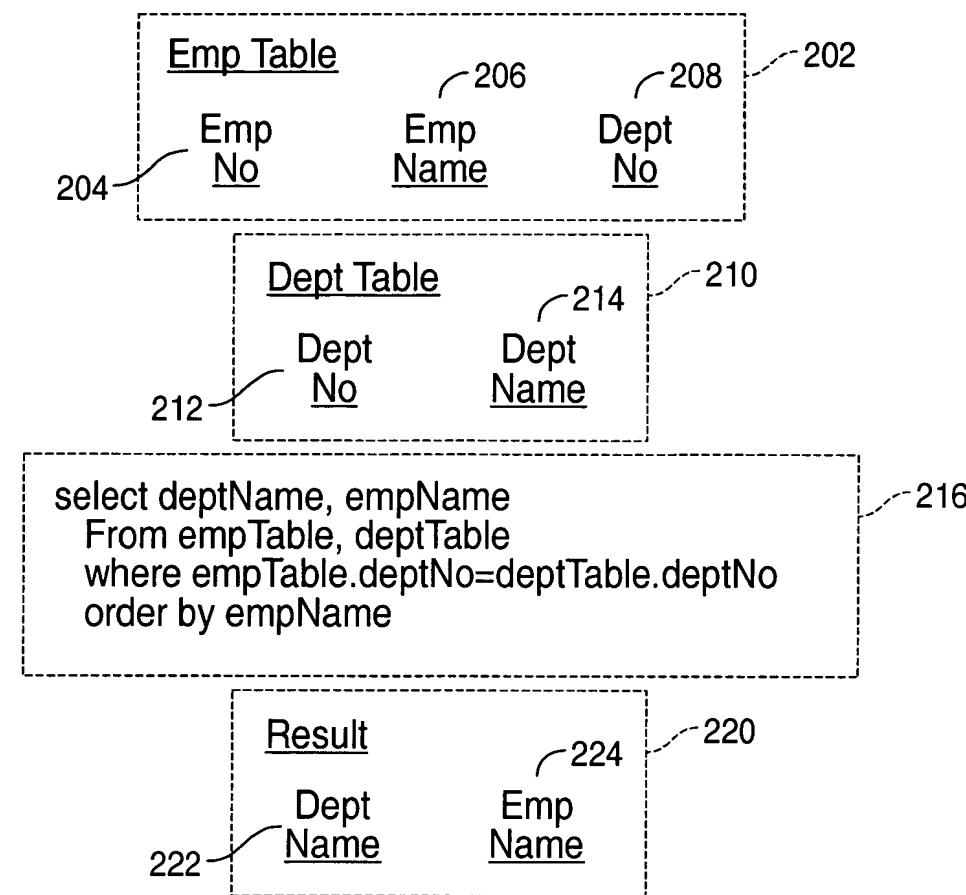


FIG. 2

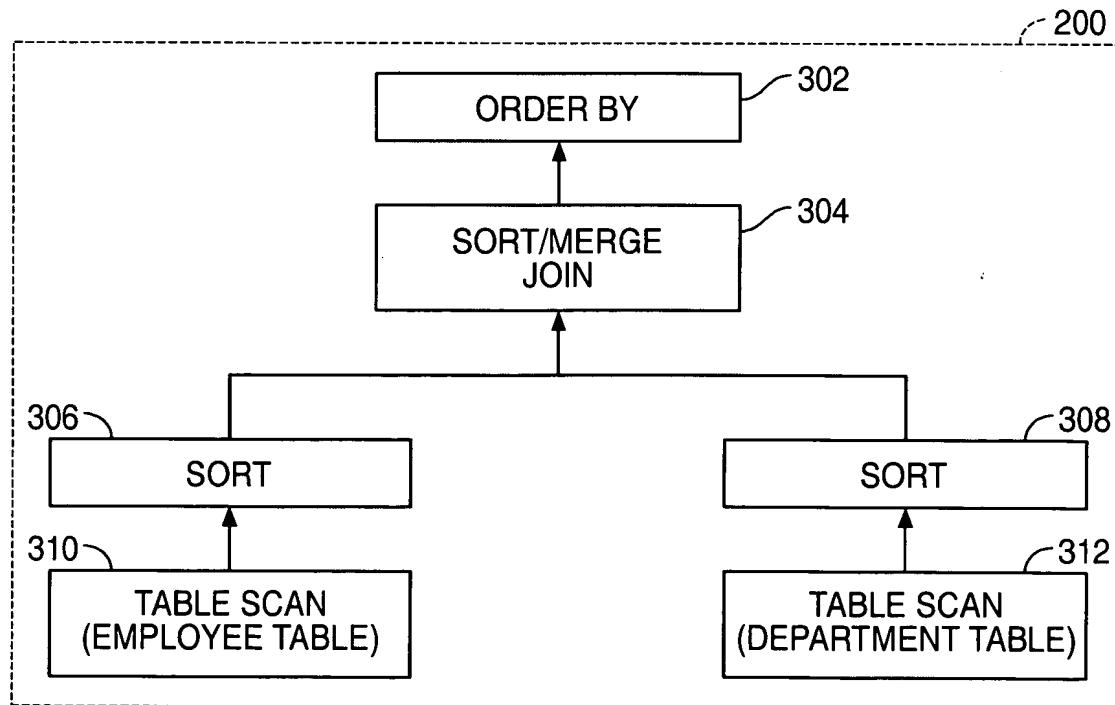


FIG. 3A

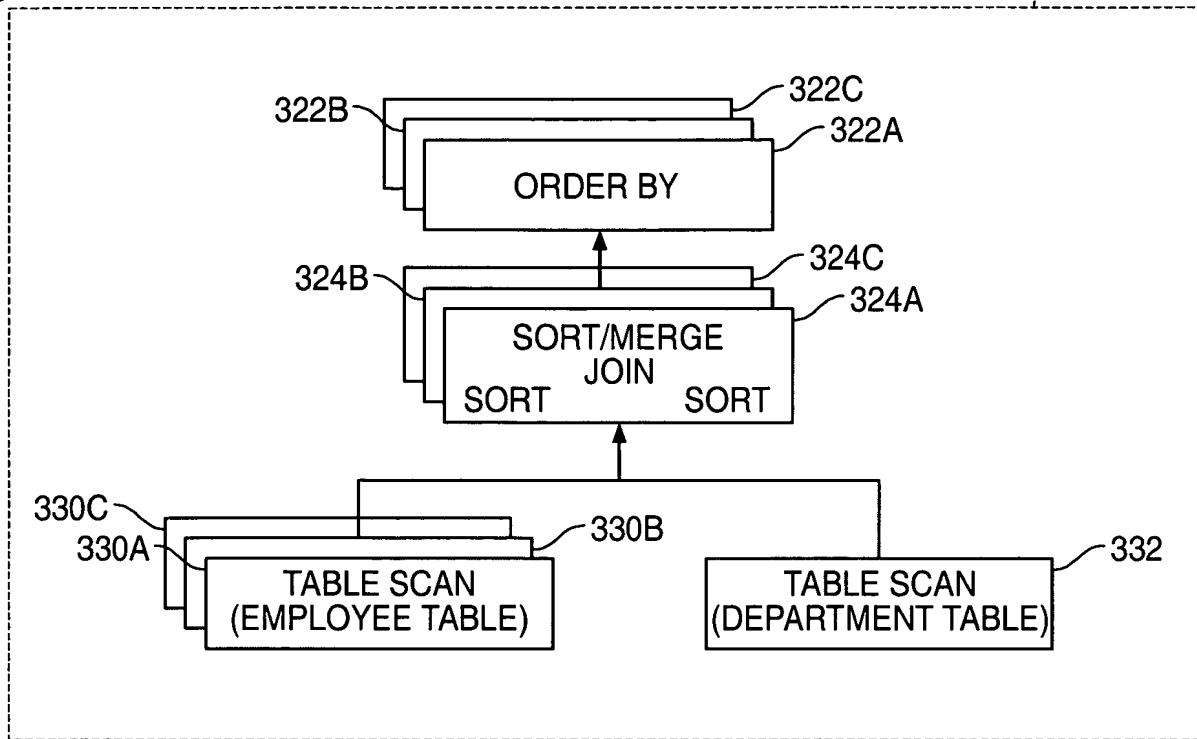


FIG. 3B

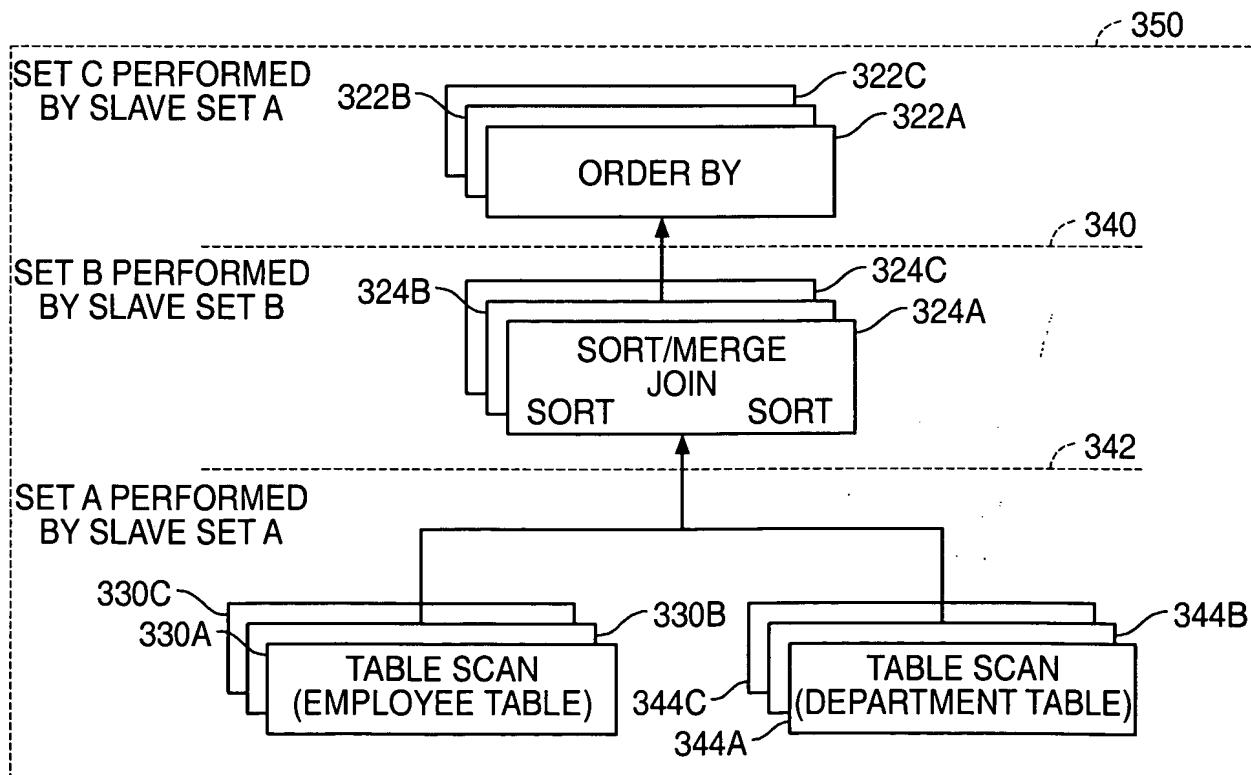


FIG. 3C

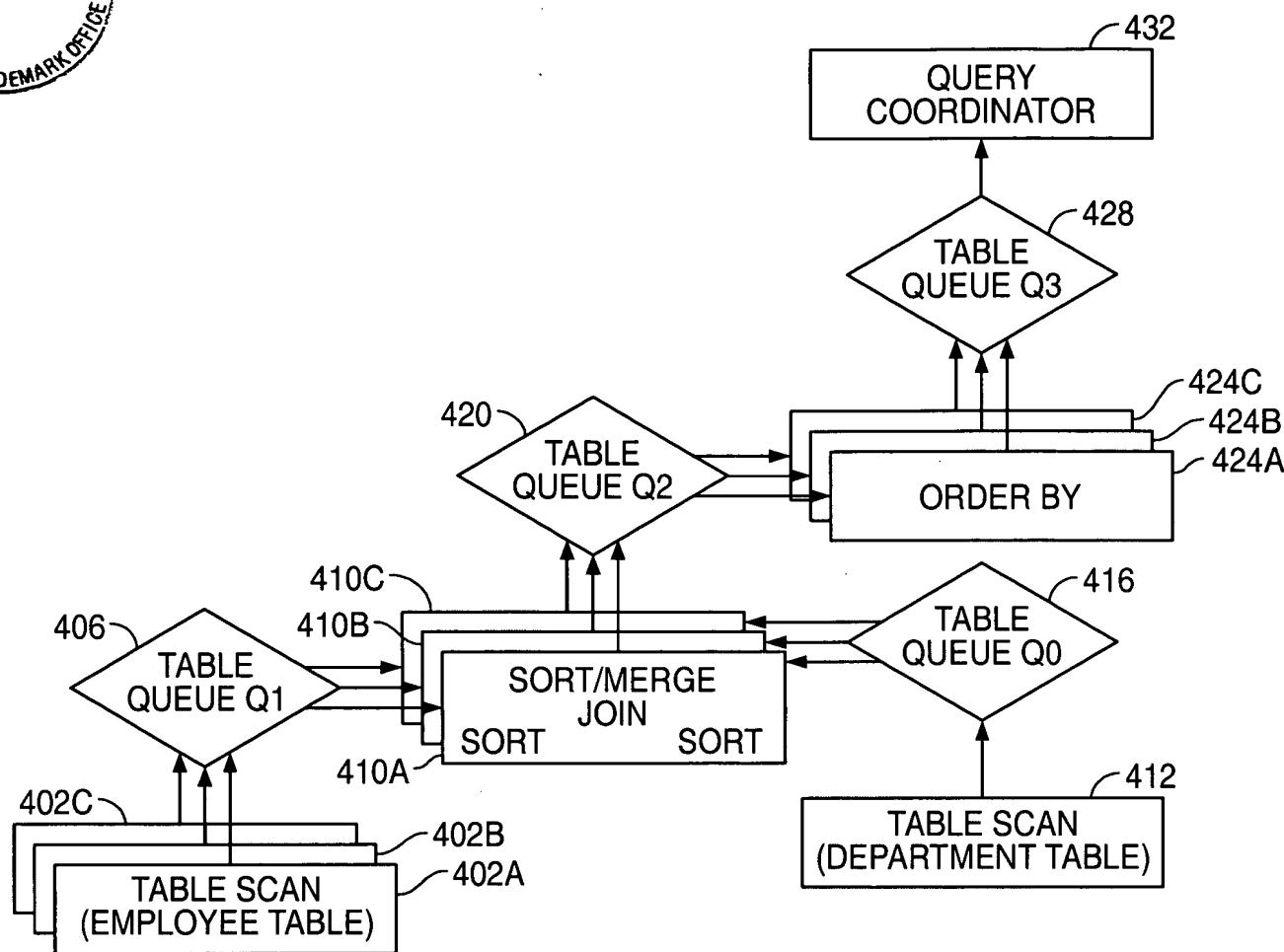


FIG. 4

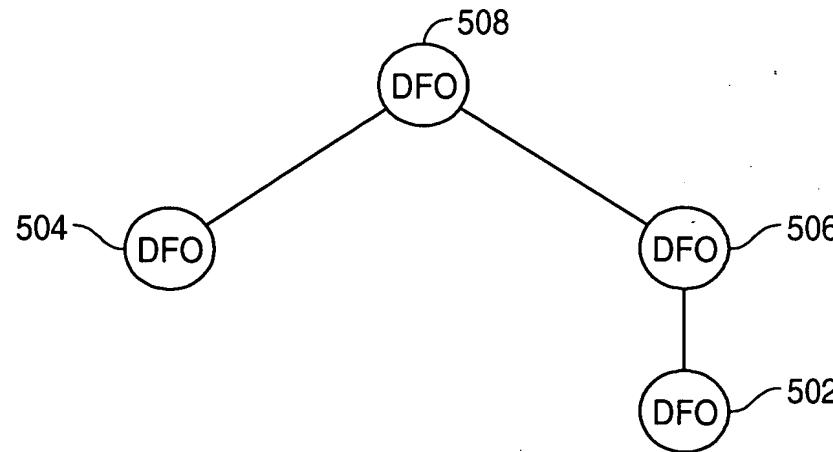
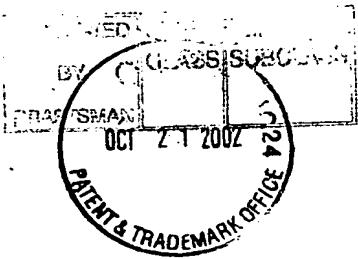


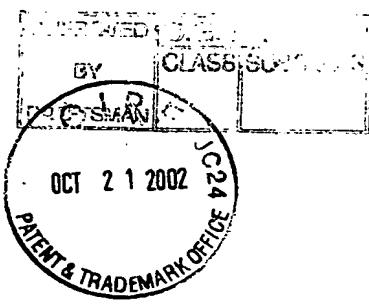
FIG. 5



6/31

DFO Type	Type of DFO (e.g., table scan, sort/merge join)
Pointer to Parent	Pointer to parent node
Pointer to Sibling	Pointer to next-node
Row Source	Row source equivalent for this node
Operation	Identifies table node for this queue
Table Queue Identifier	Pointer to first child of parallelized node
Skipped Node Information	Number of key columns in input table
Non-QC Node Information	queue
Pointer to First Child	Parallelized node's partitioning type
Key Column Number	(e.g., hash, key range, round robin)
Partitioning type	Number of clumped columns with parent
Clumped Columns	Contains table scan information (e.g., table name and degree of parallelism)
Predicates	Contains information for an indexed nested loop join (e.g., right and left input table)
Control Blocks	Contains information for a sort/merge join (e.g., merge or outer join control flags)
Table Scan	Contains information for index creation (e.g., column list, index type, and storage parameters)
Indexed Nested Loop Join names)	
Sort/Merge join	
Index Creation	

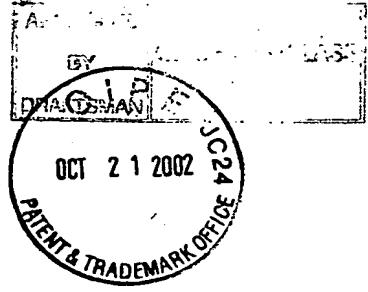
FIG. 6A



7/31

Pointer to Next-to-Execute	Pointer to the next DFO to execute
Table Queue Identifier	Output table queue identifier
Rowid Table Number	Number of tables partitioned by rowid
SQL Statement Size	Size of the SQL statement representing DFO
SQL Statement	SQL statement representing DFO
Flags	Slave sends "Started" message upon receipt
Started	Slave sends "Ready" message when input consumed
Ready	Slave expects to be closed upon completion
Close	

FIG. 6B



8/31

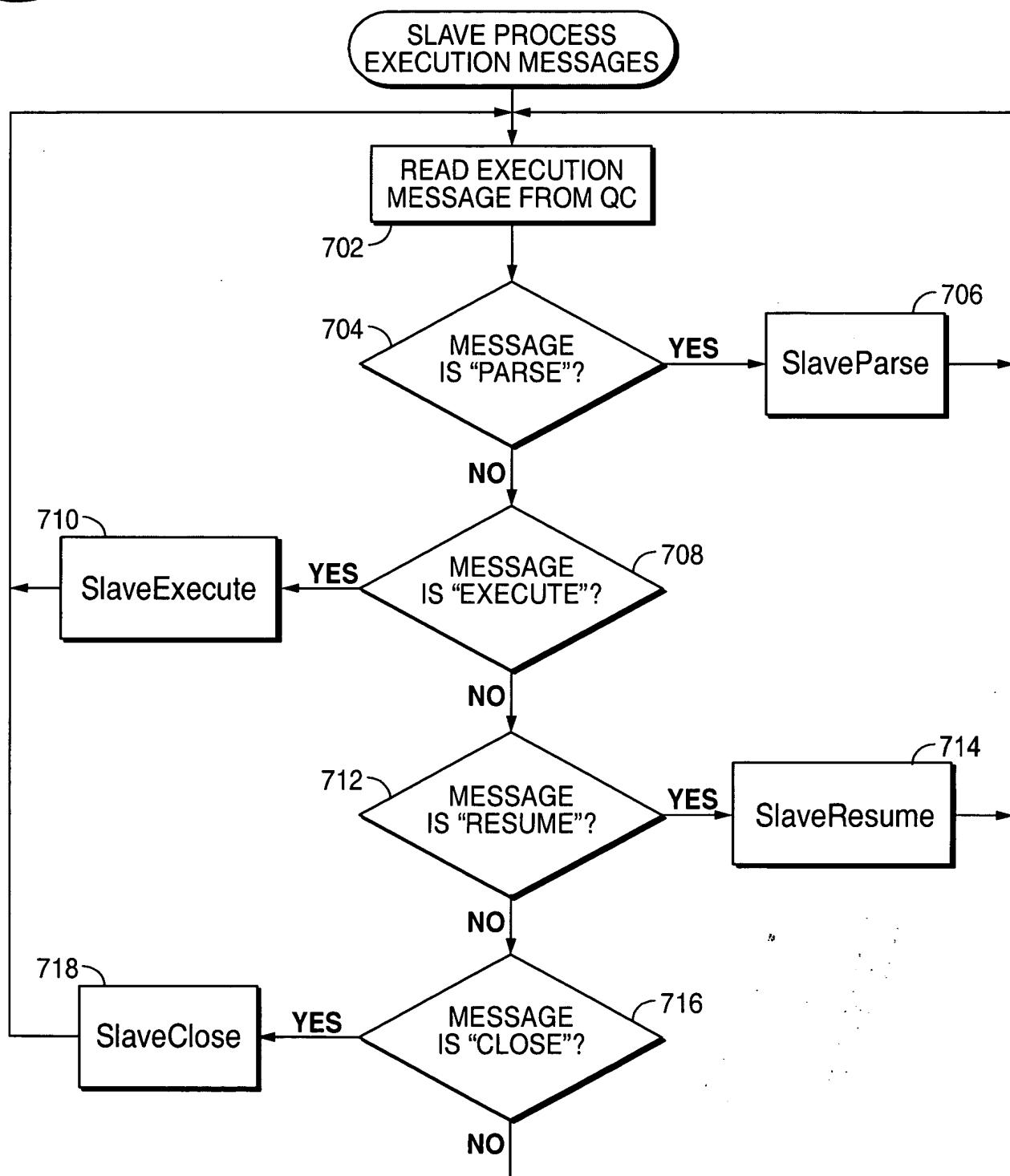
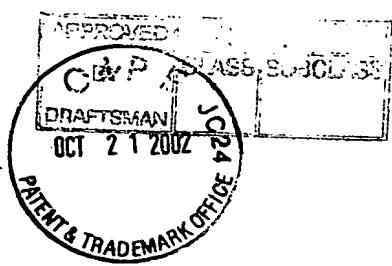


FIG. 7A



9/31

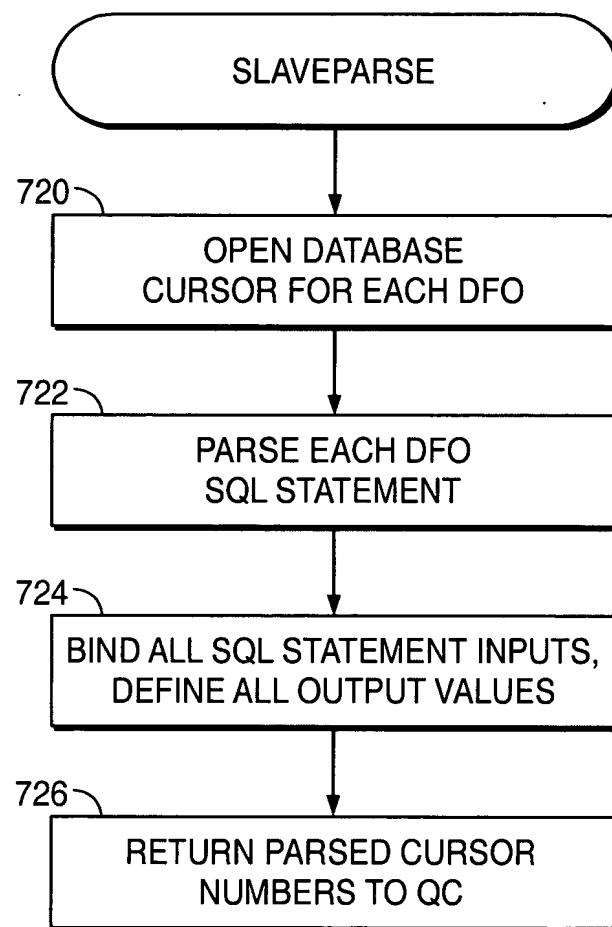
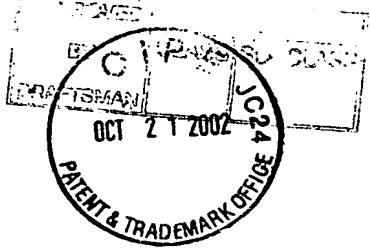


FIG. 7B



10/31

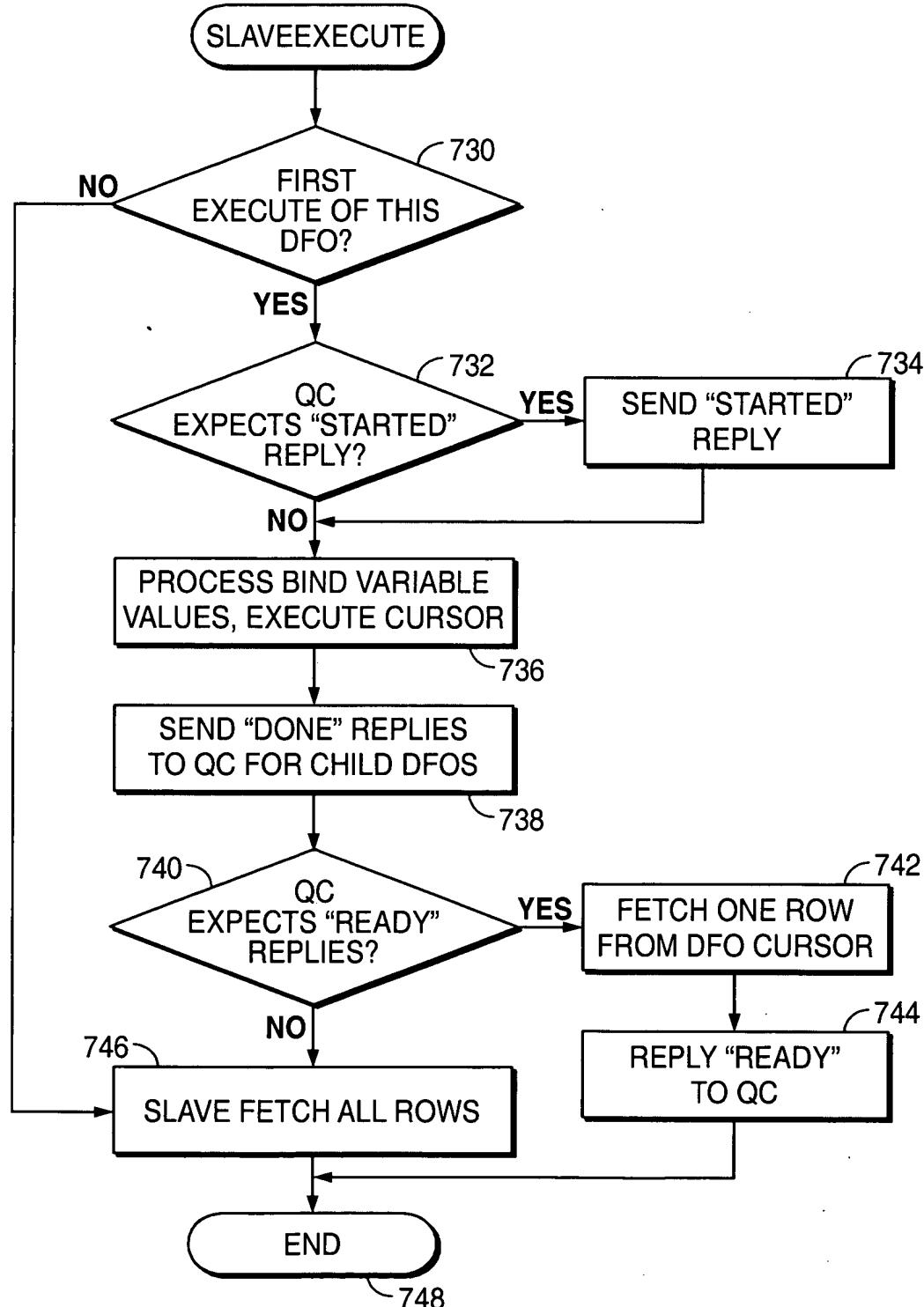
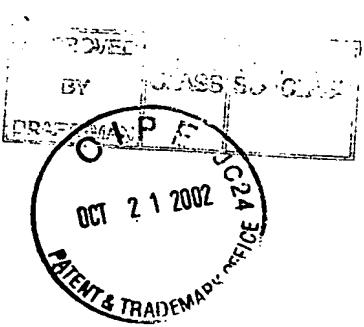


FIG. 7C



11/31

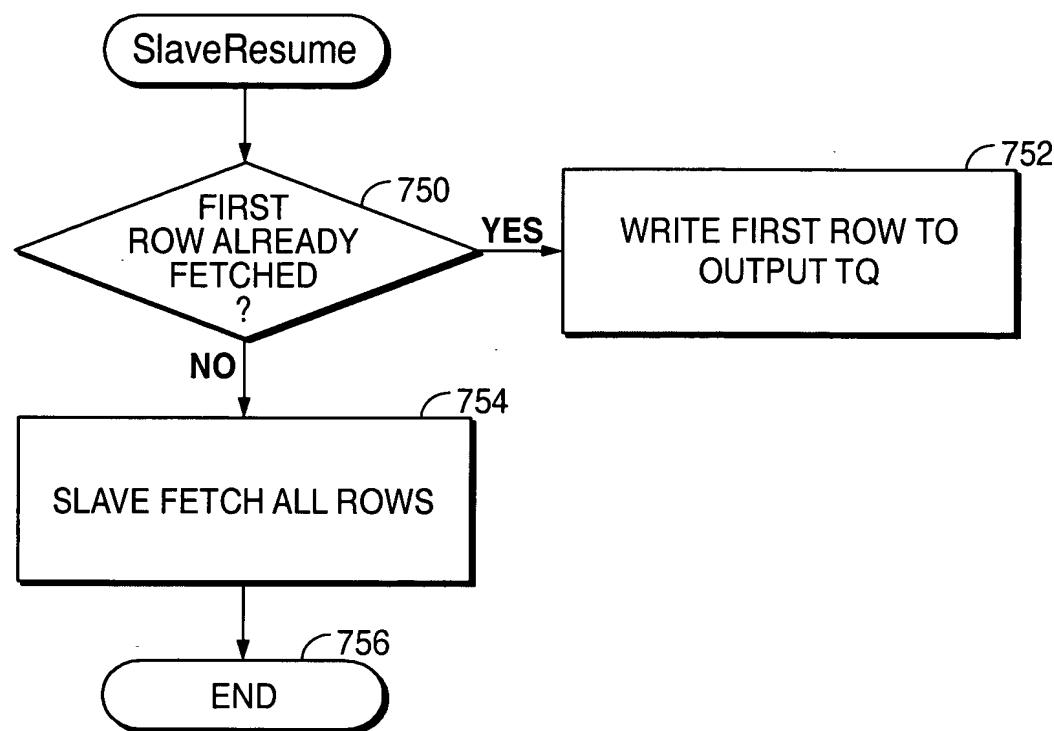


FIG. 7D

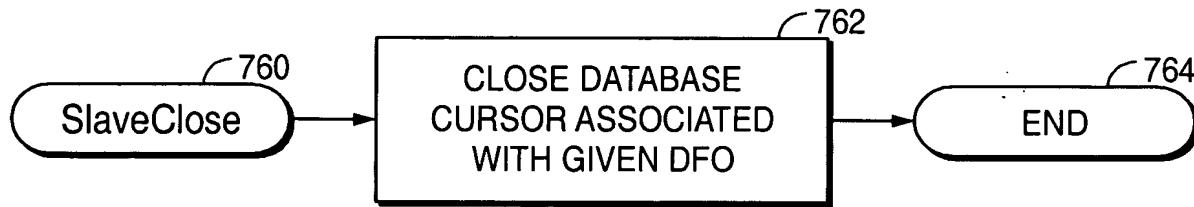
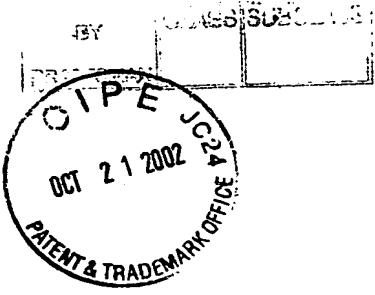


FIG. 7E



12/31

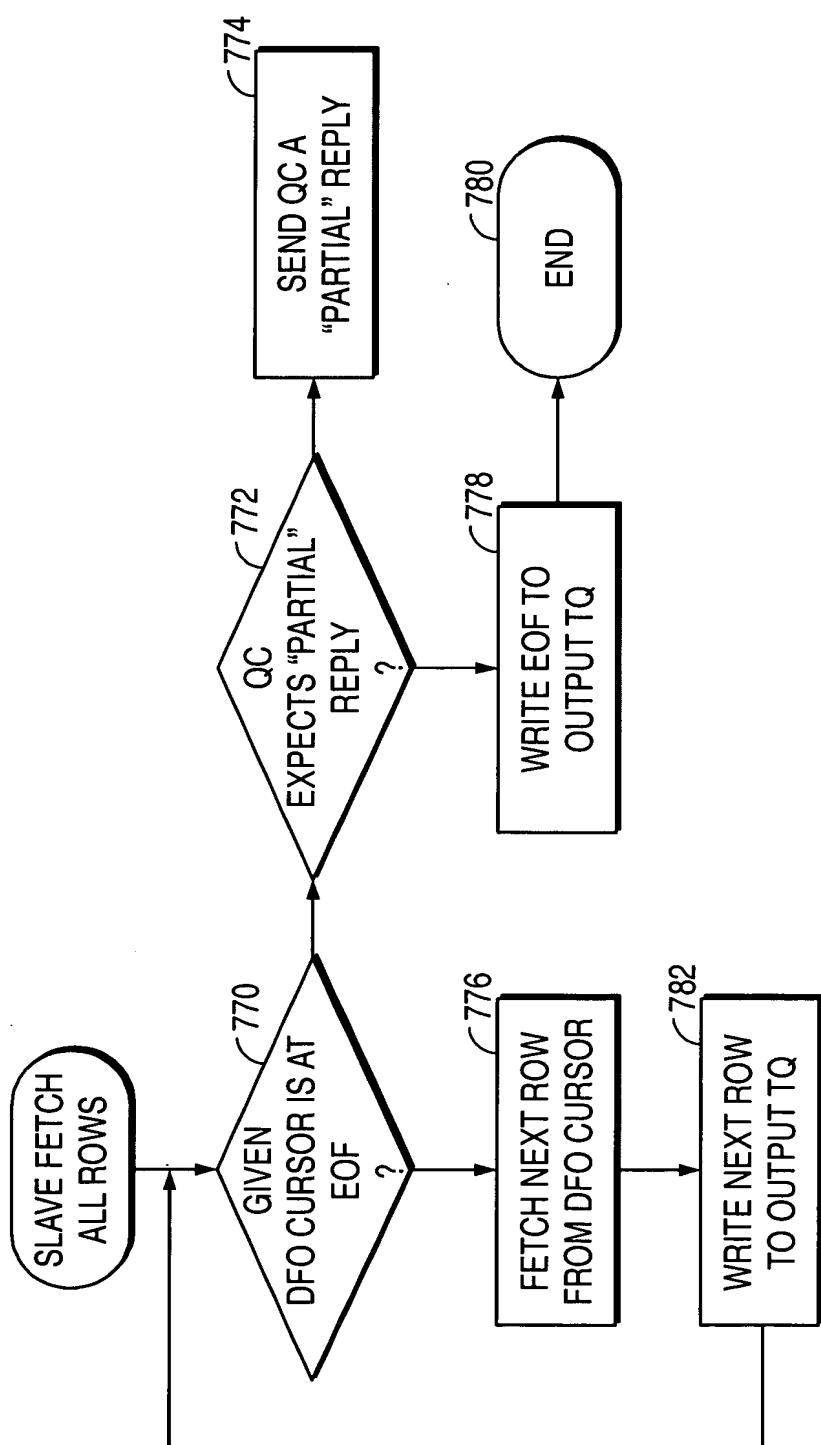


FIG. 7F



13/31

-800

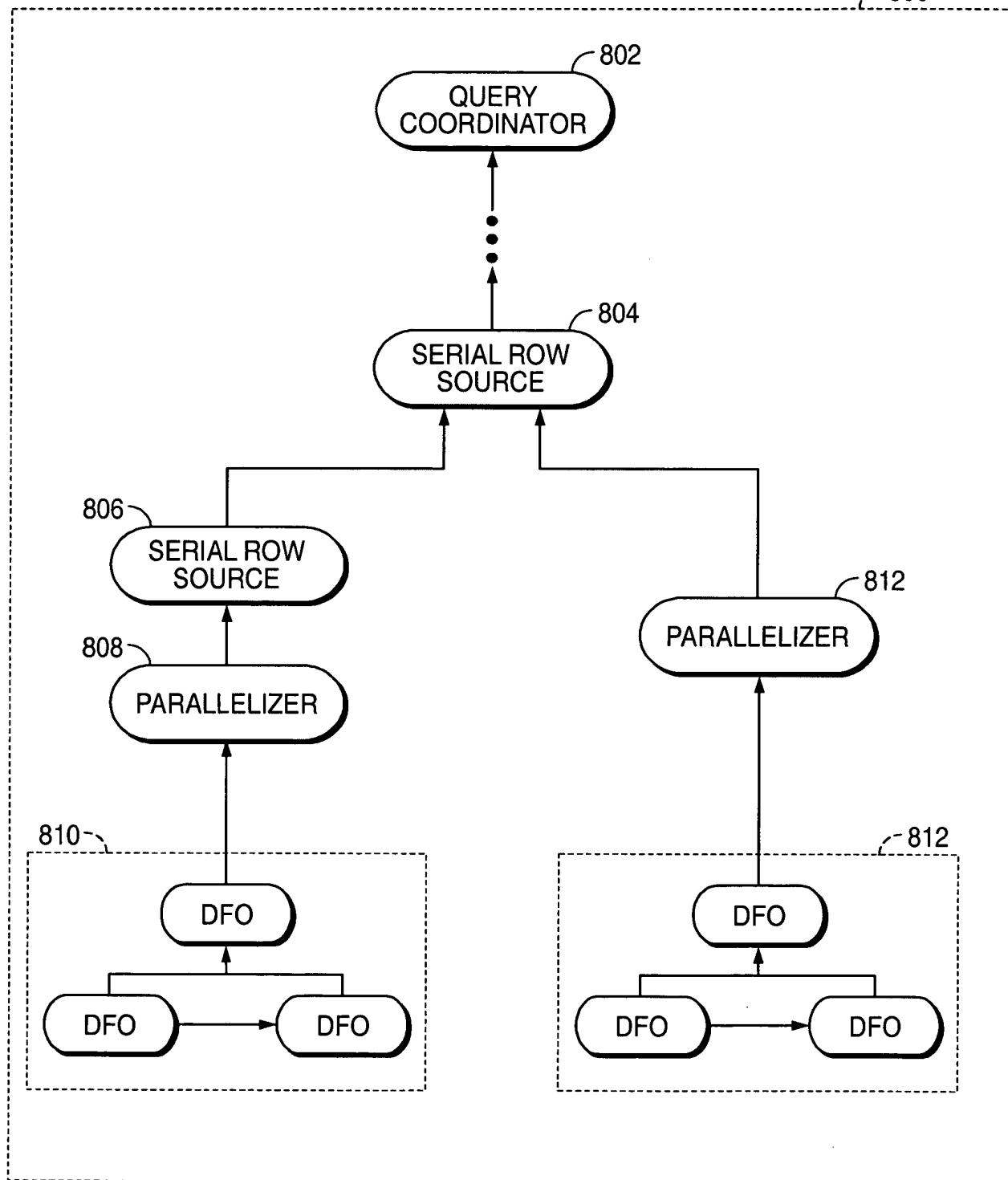
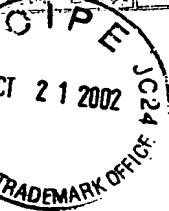
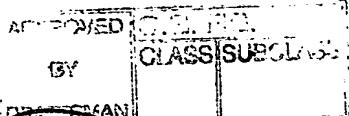


FIG. 8



14/31

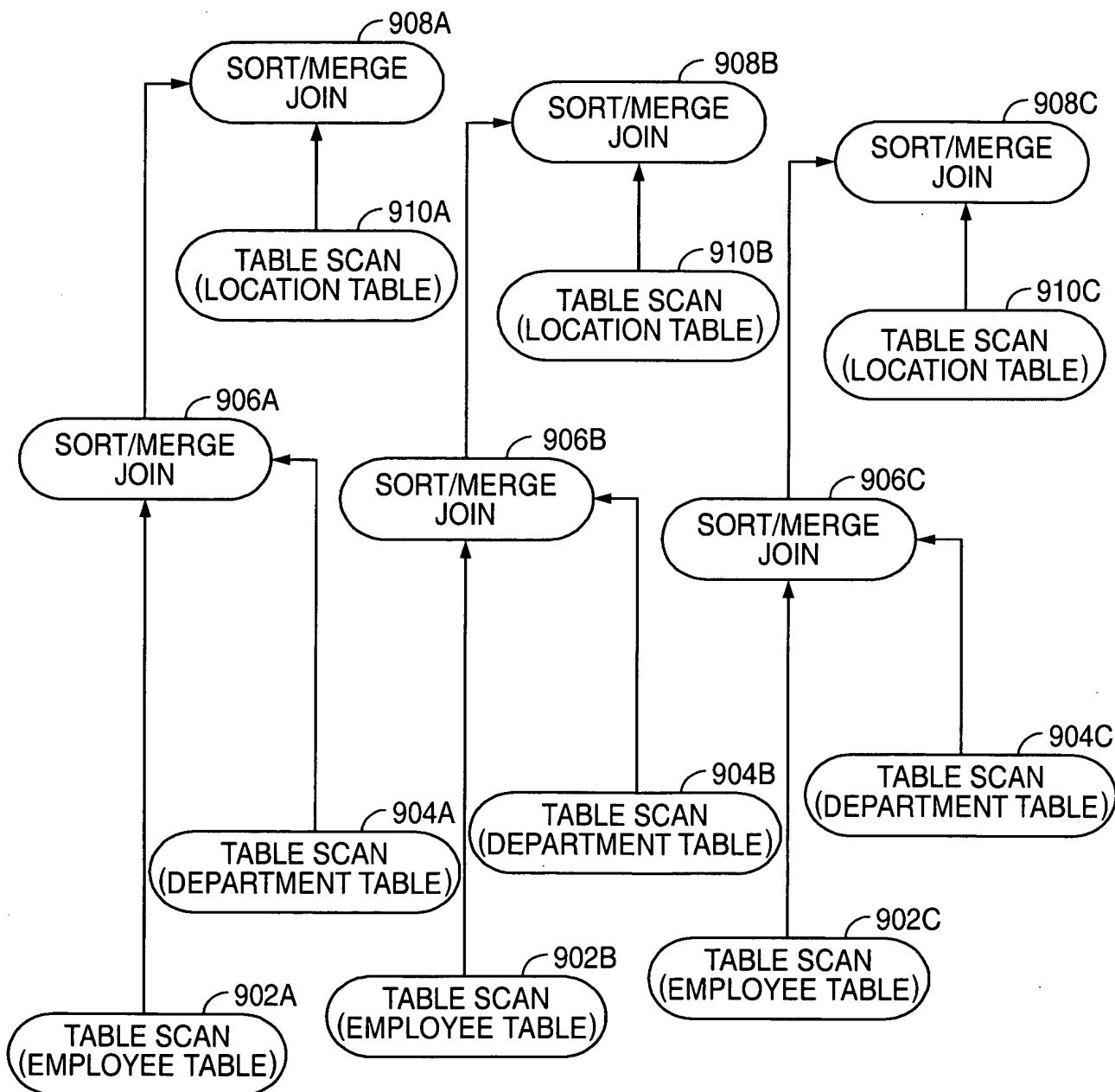


FIG. 9

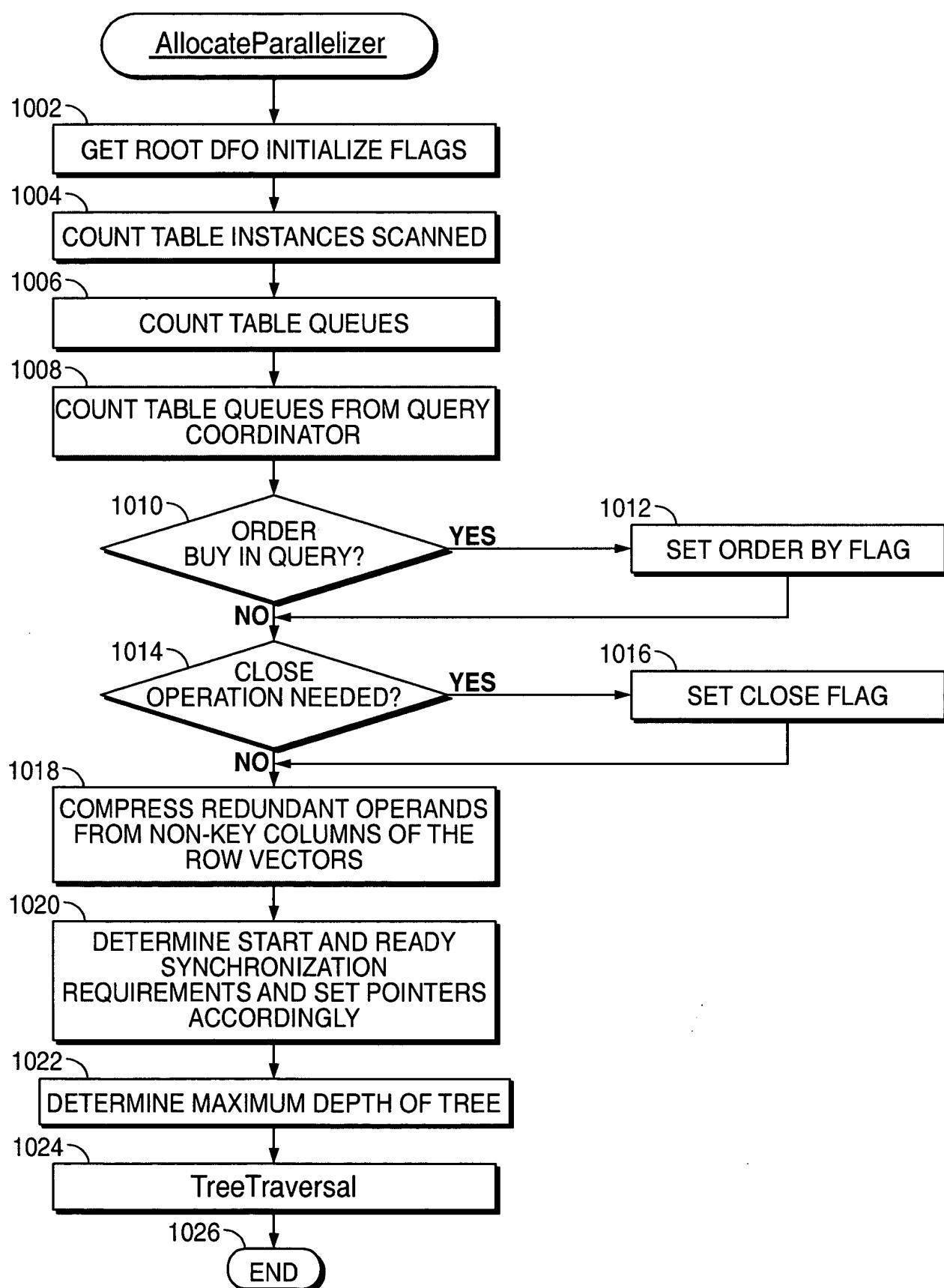
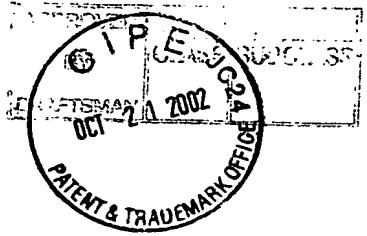


FIG. 10A



16/31

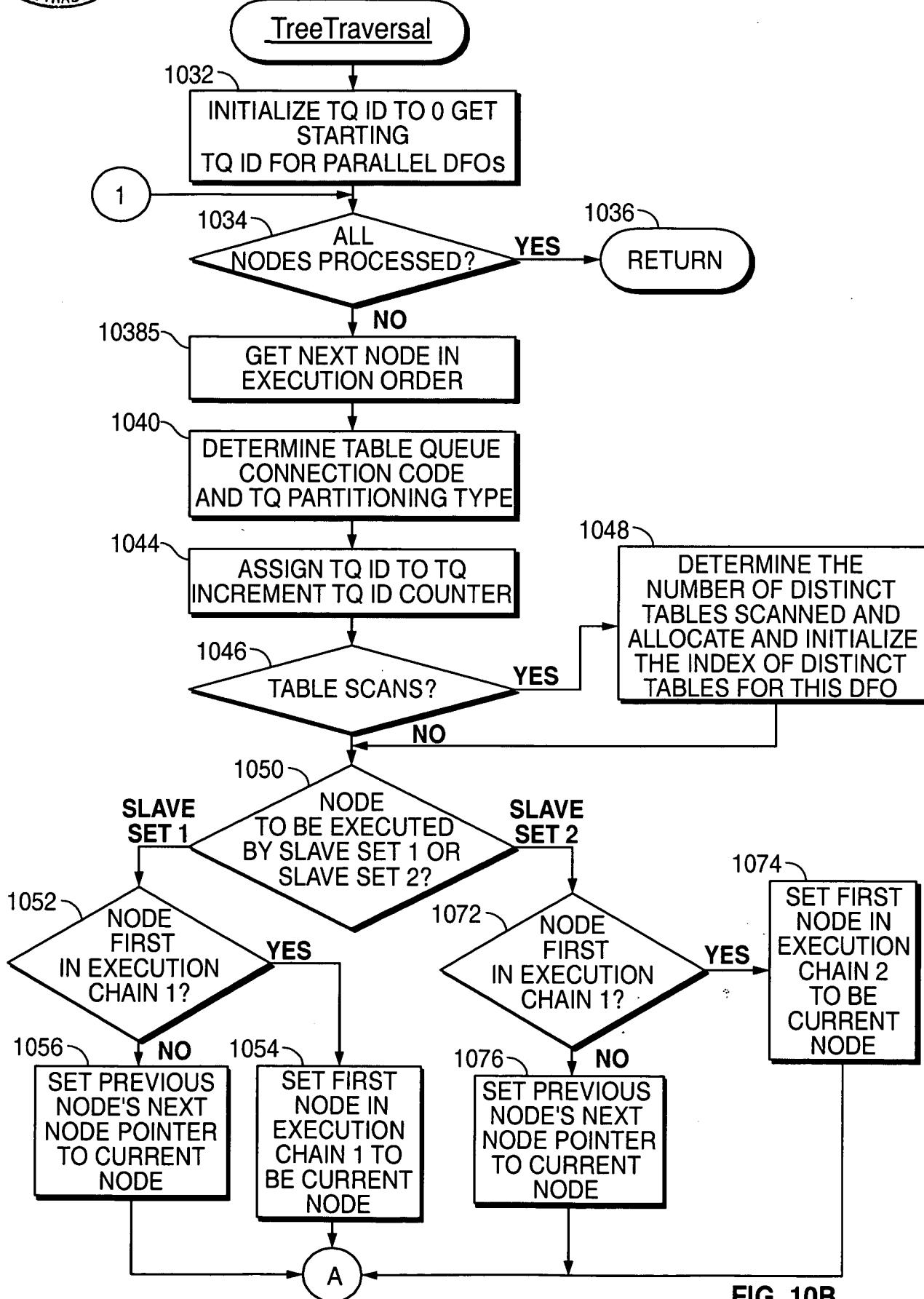
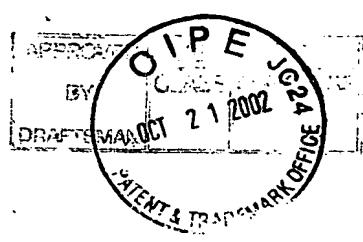


FIG. 10B



17/31

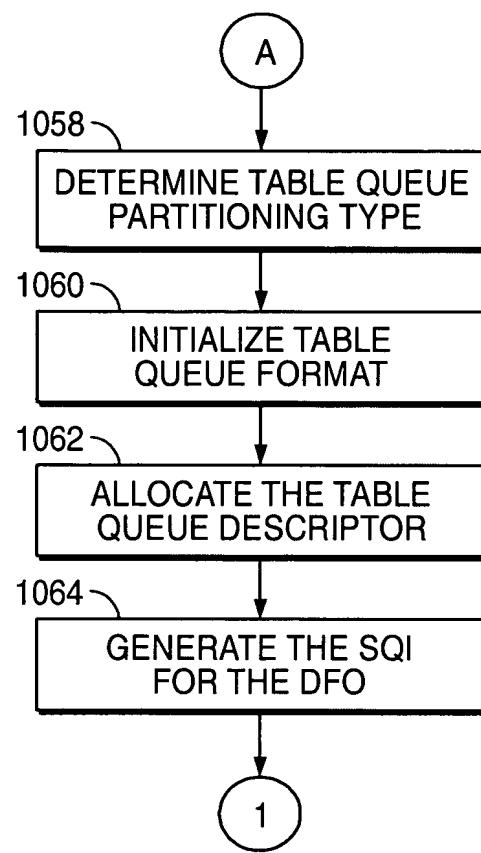


FIG. 10C

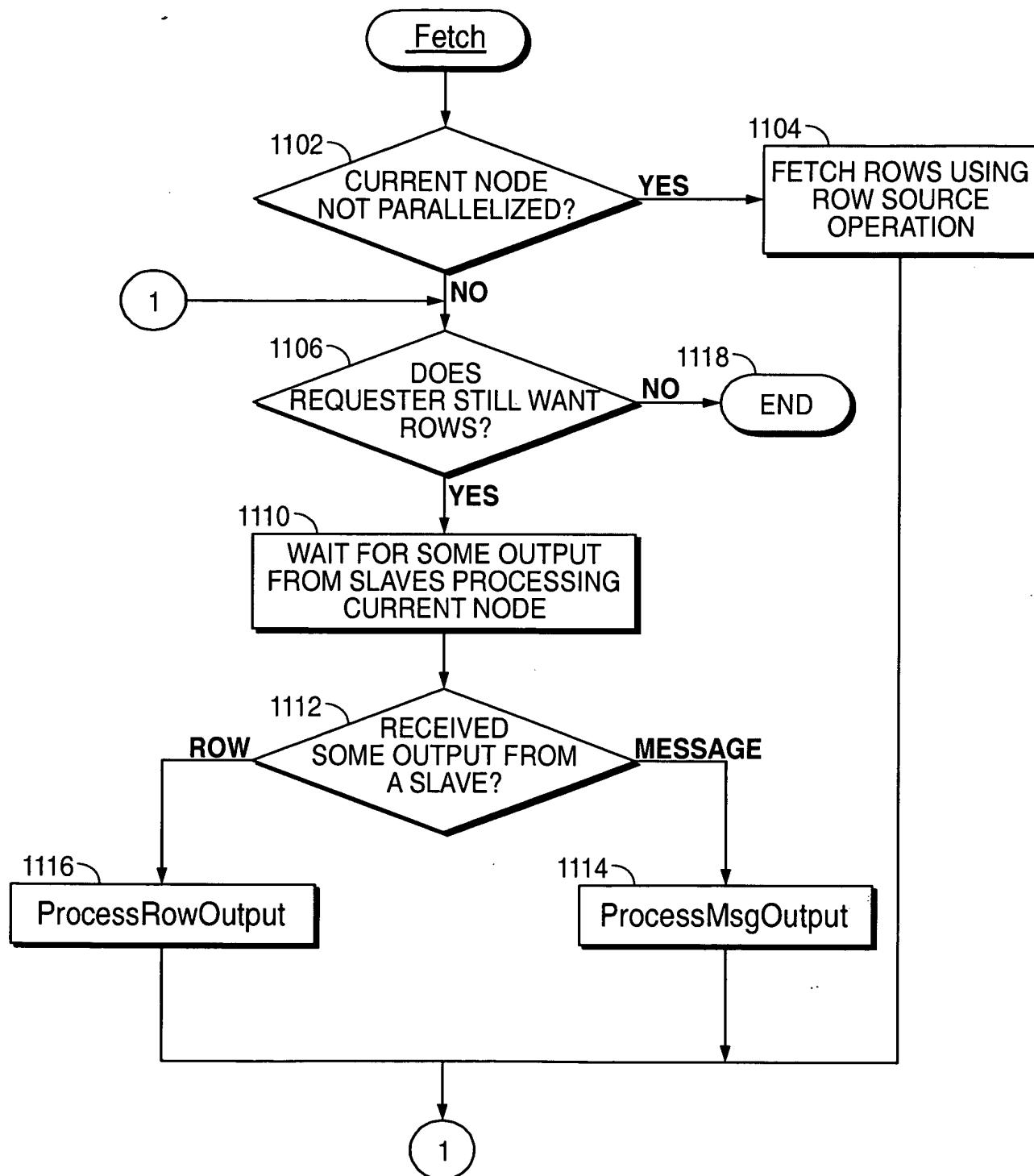
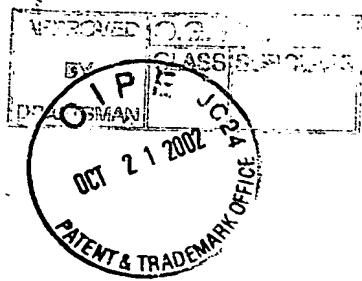


FIG. 11A

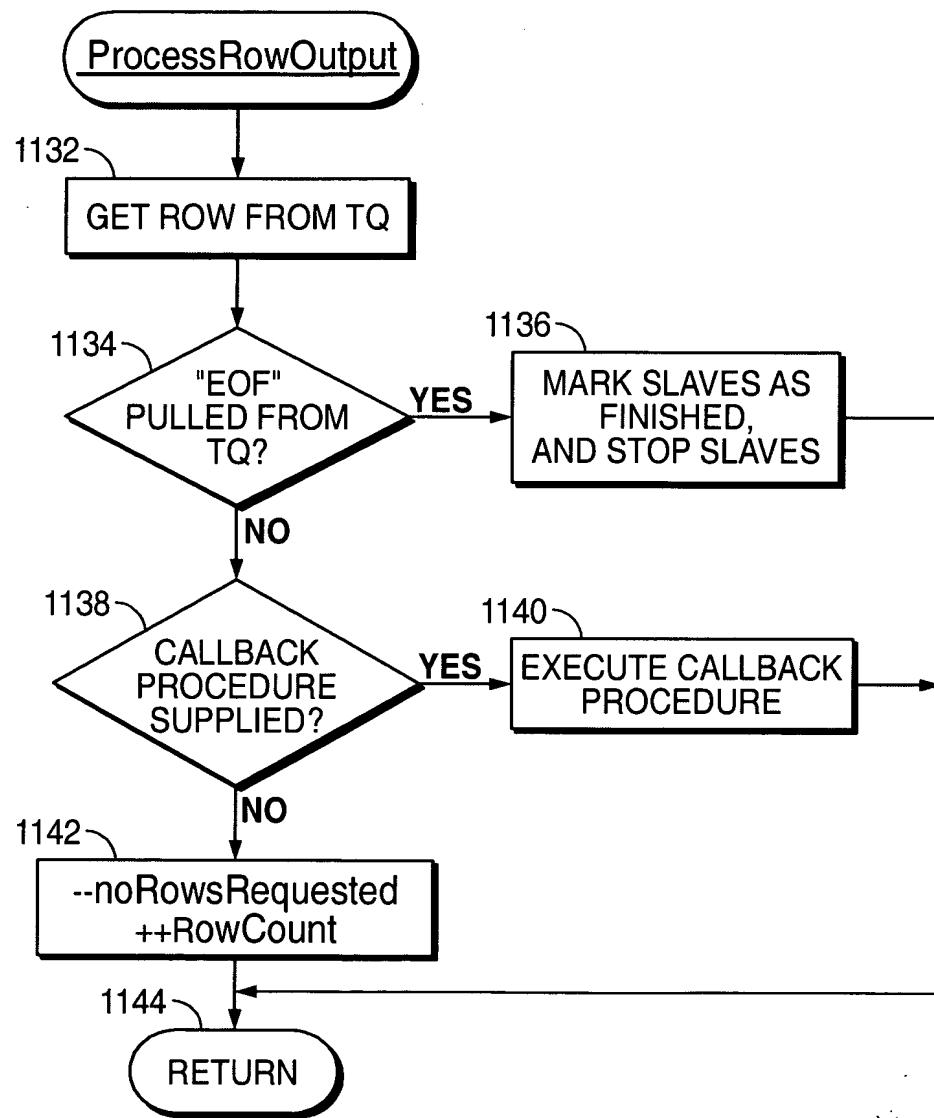


FIG. 11B

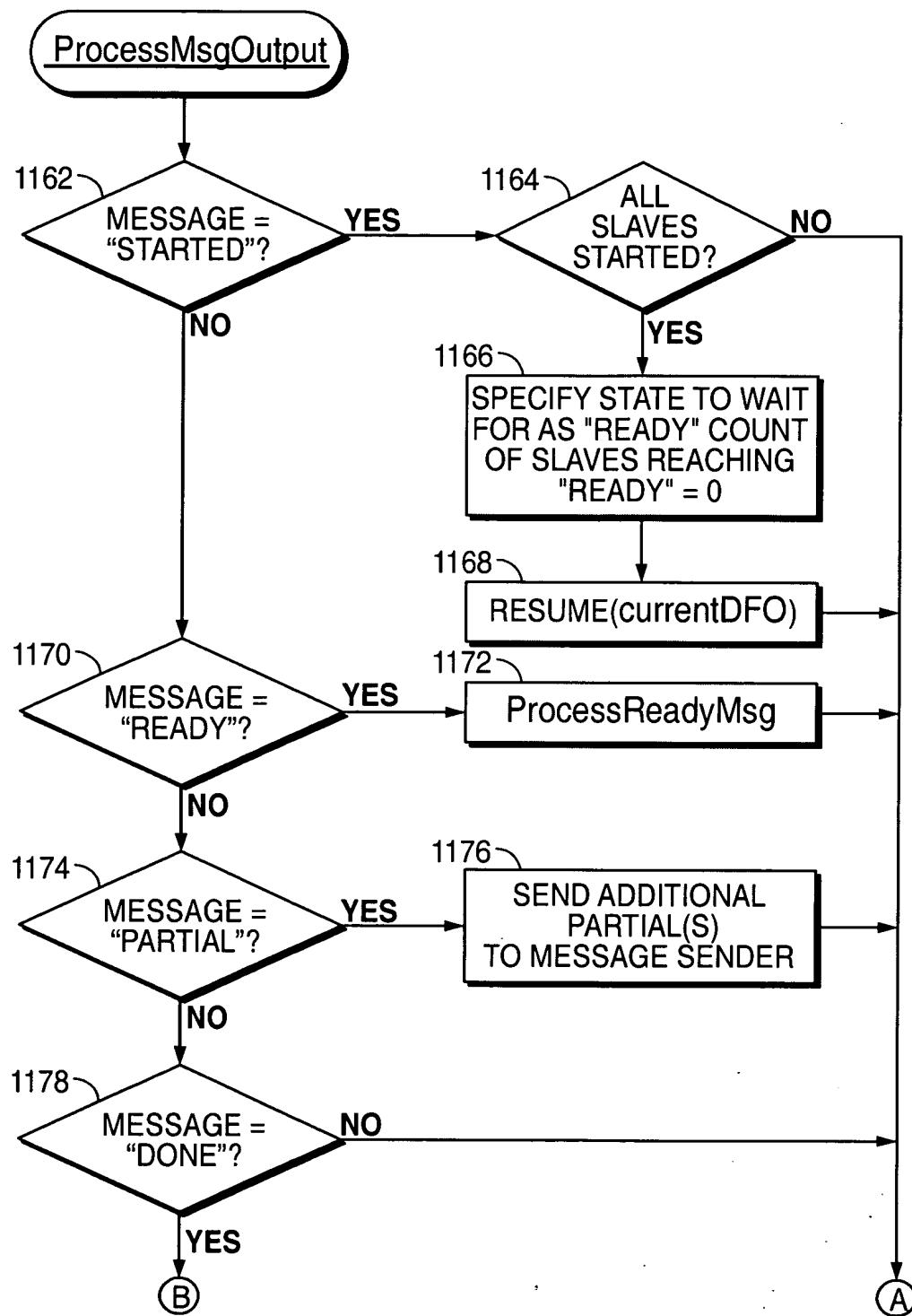
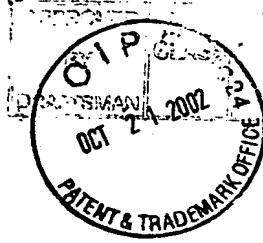


FIG. 11C



21/31

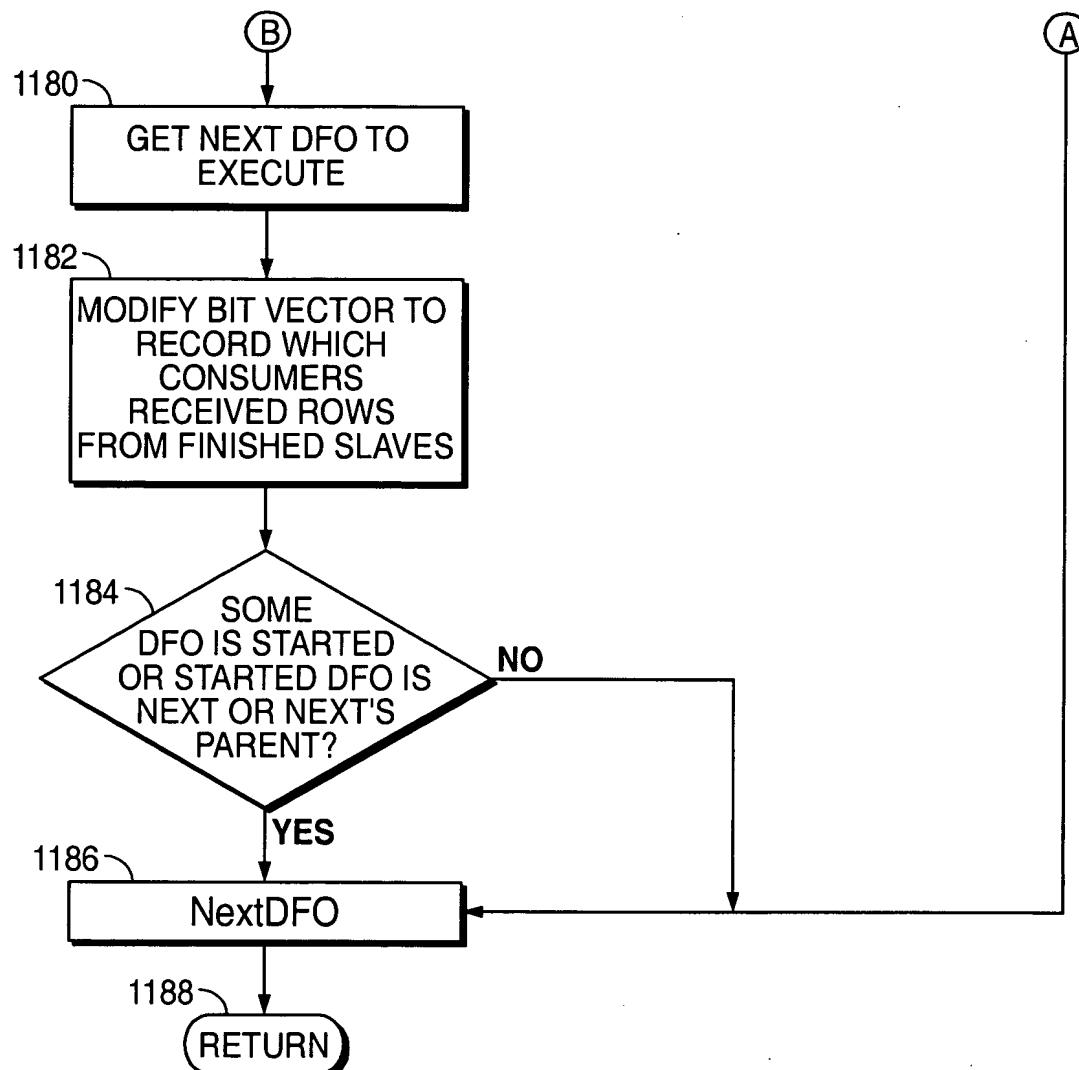
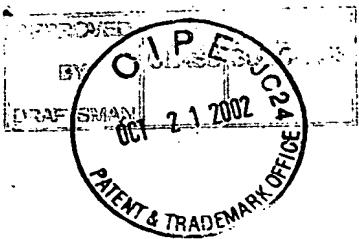


FIG. 11D



22/31

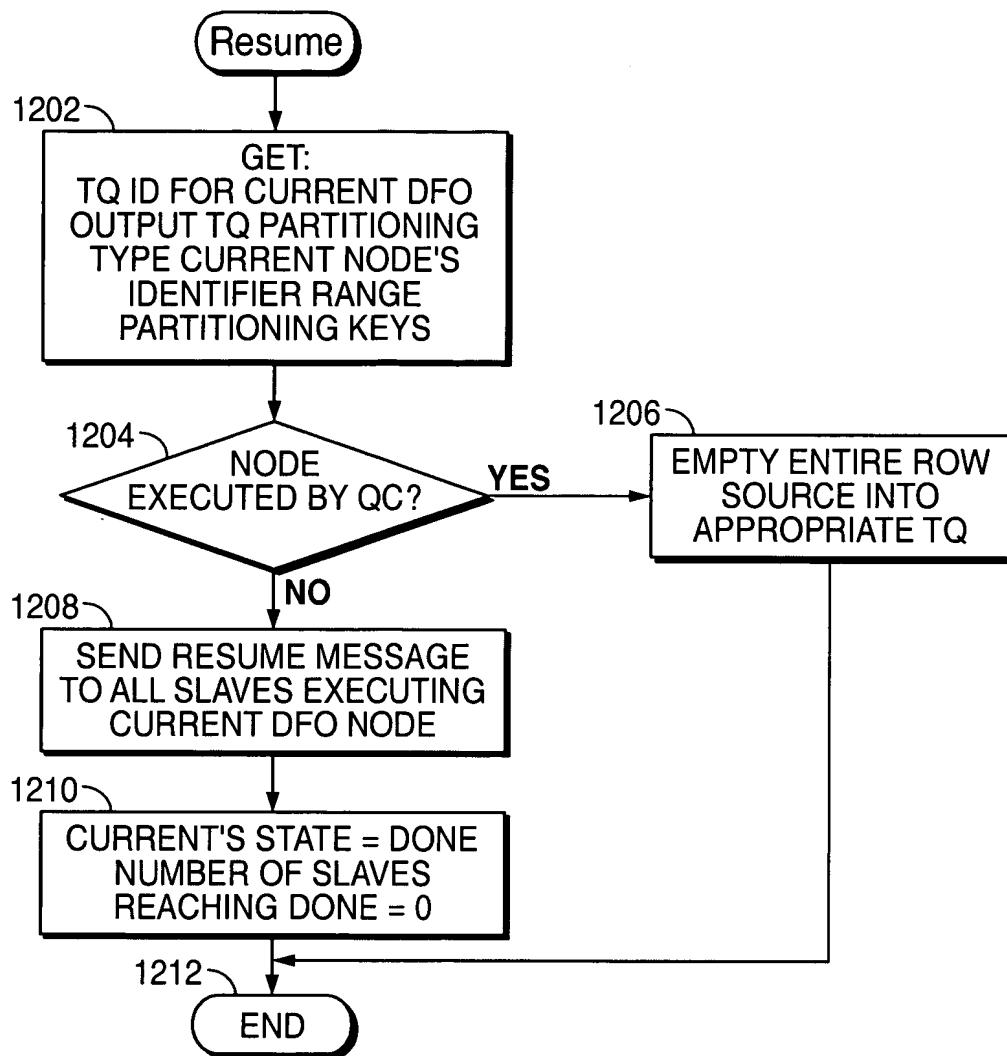


FIG. 12



23/31

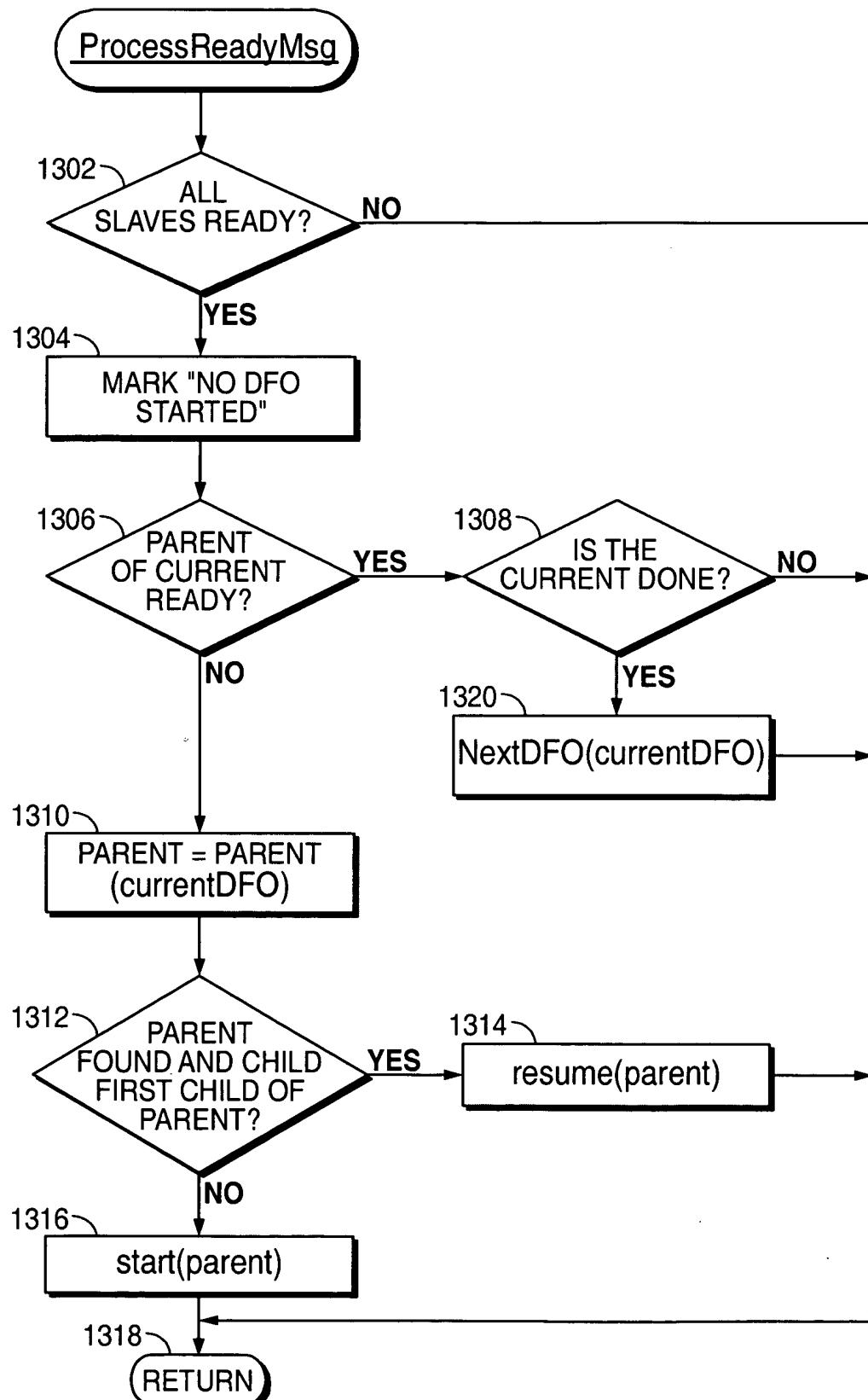
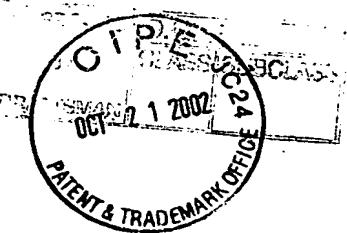


FIG. 13



24/31

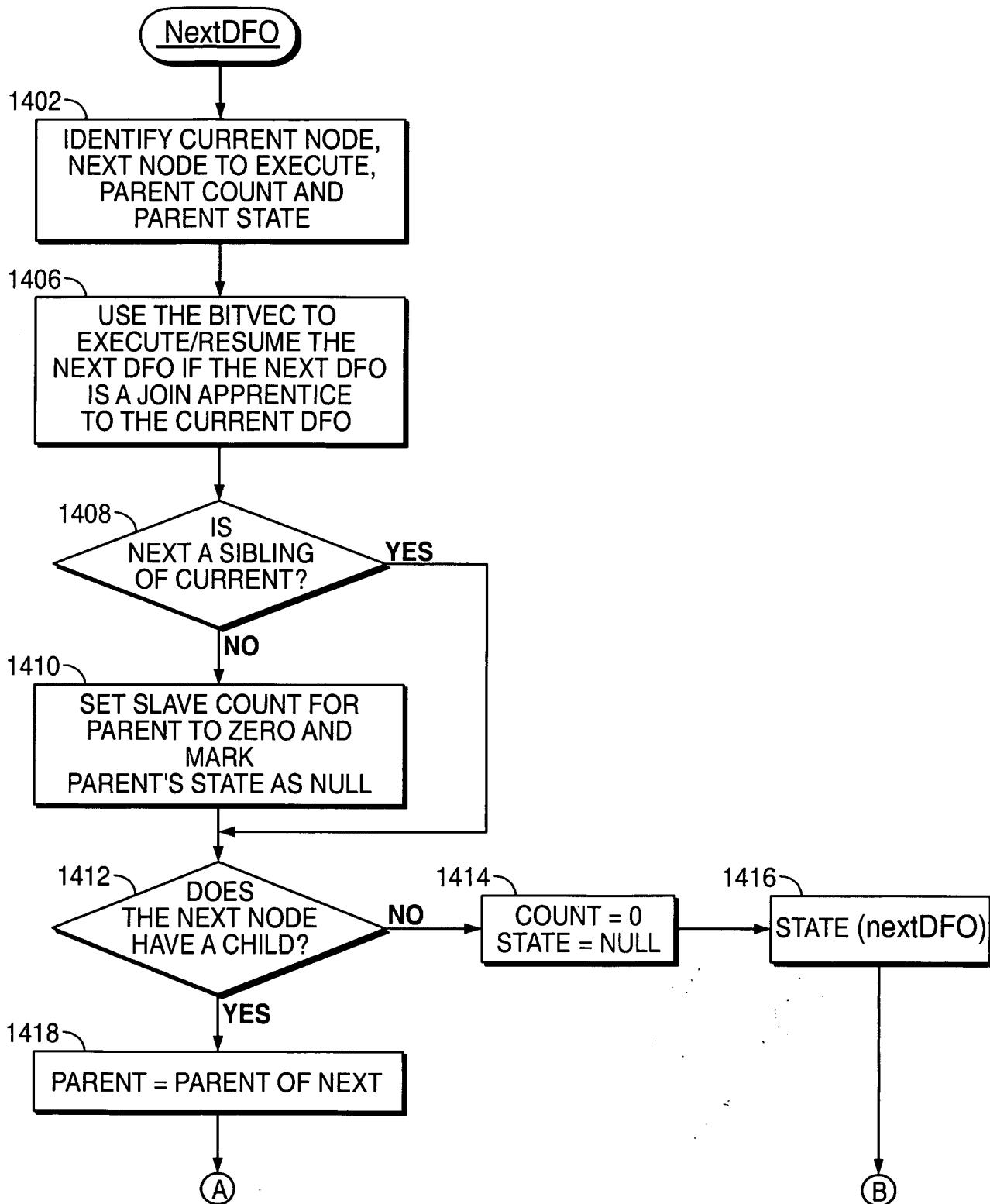
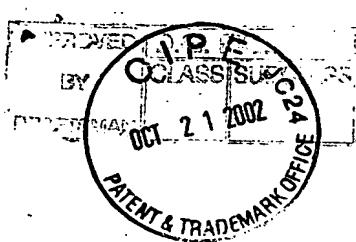


FIG. 14A



25/31

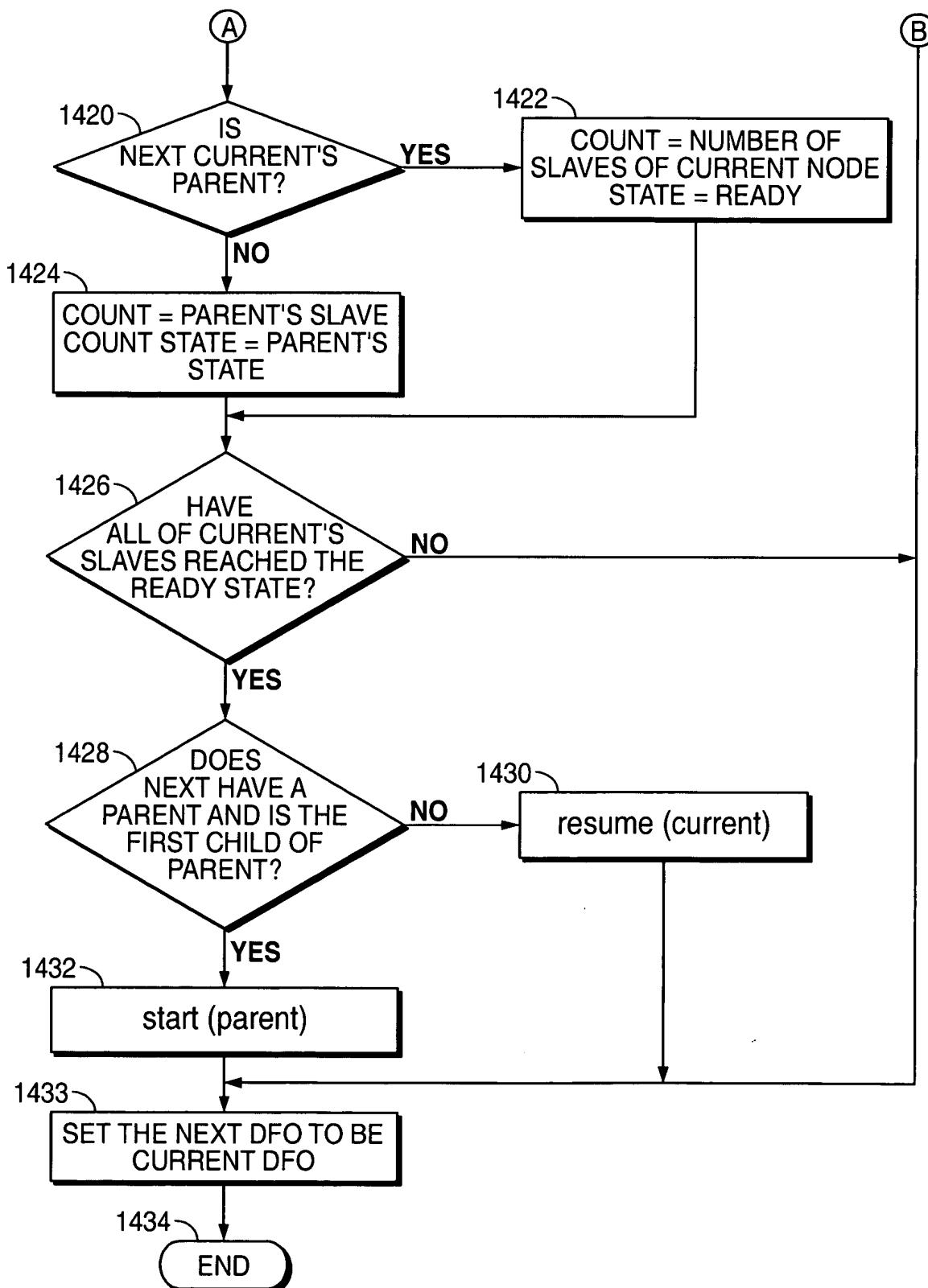
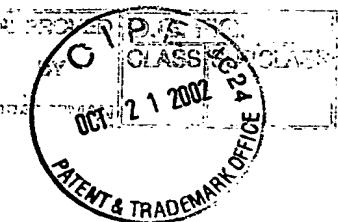


FIG. 14B



26/31

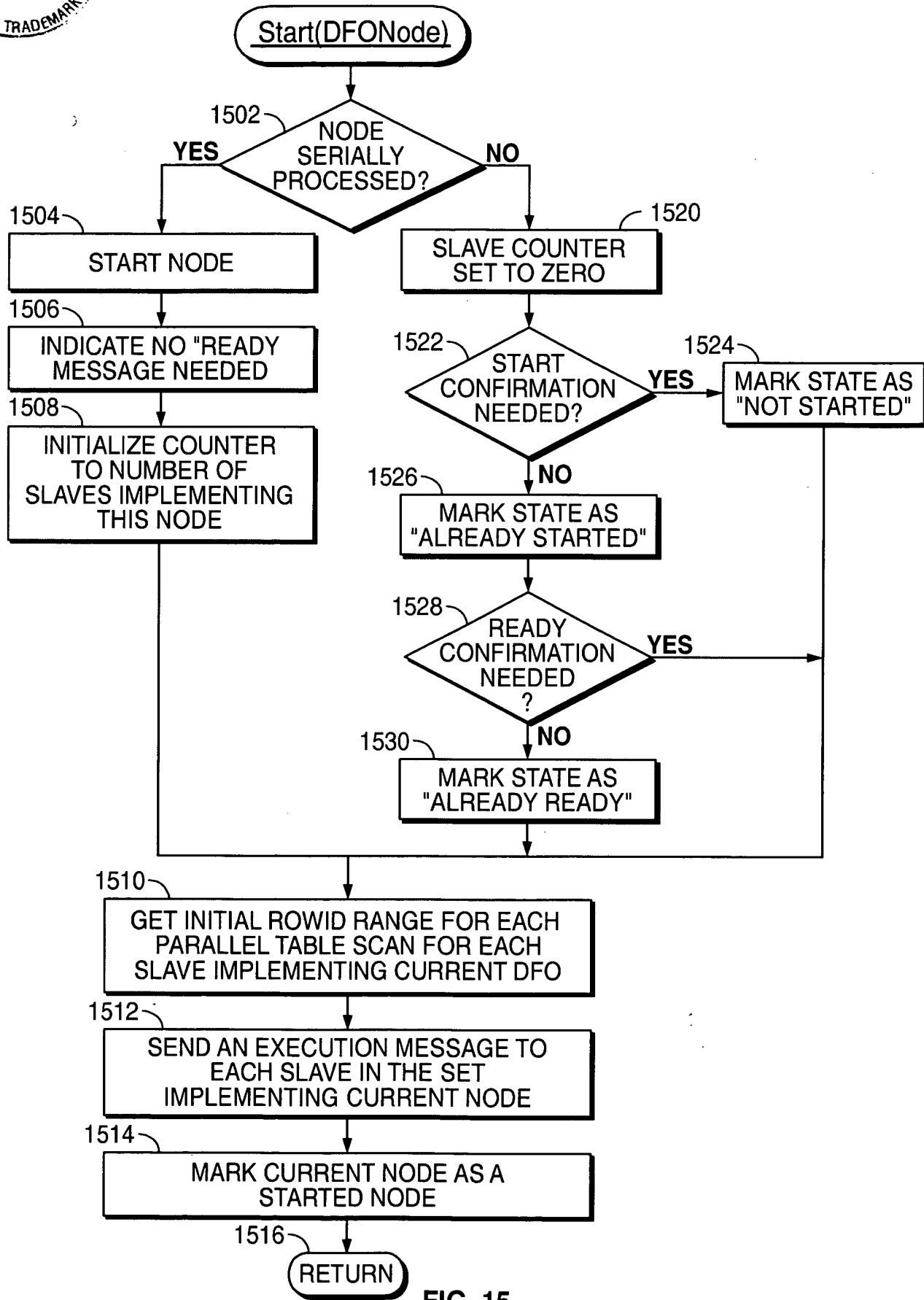
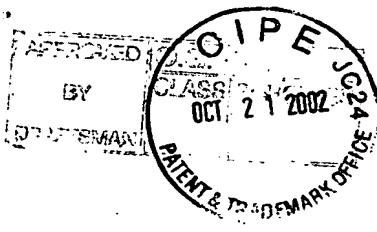


FIG. 15



27/31

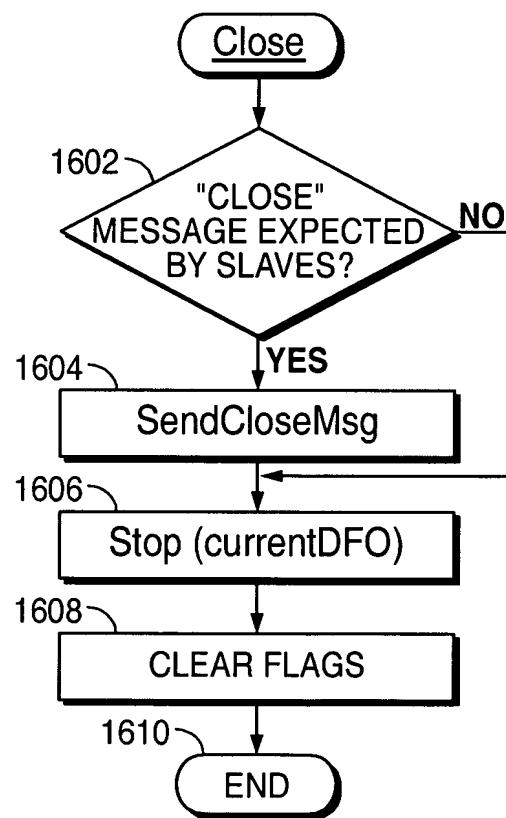
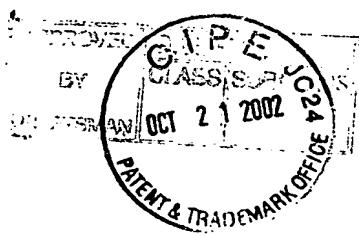


FIG. 16



28/31

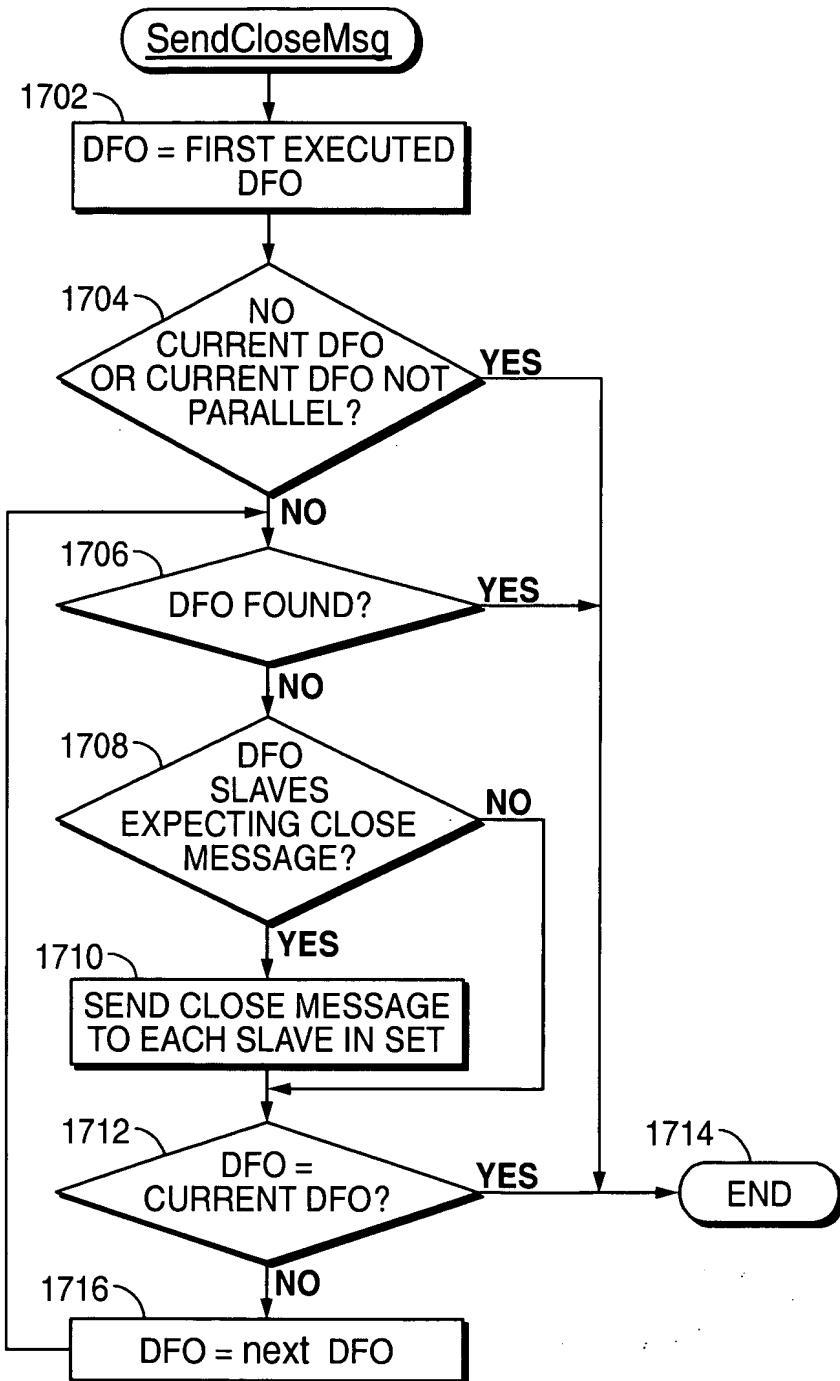


FIG. 17



29/31

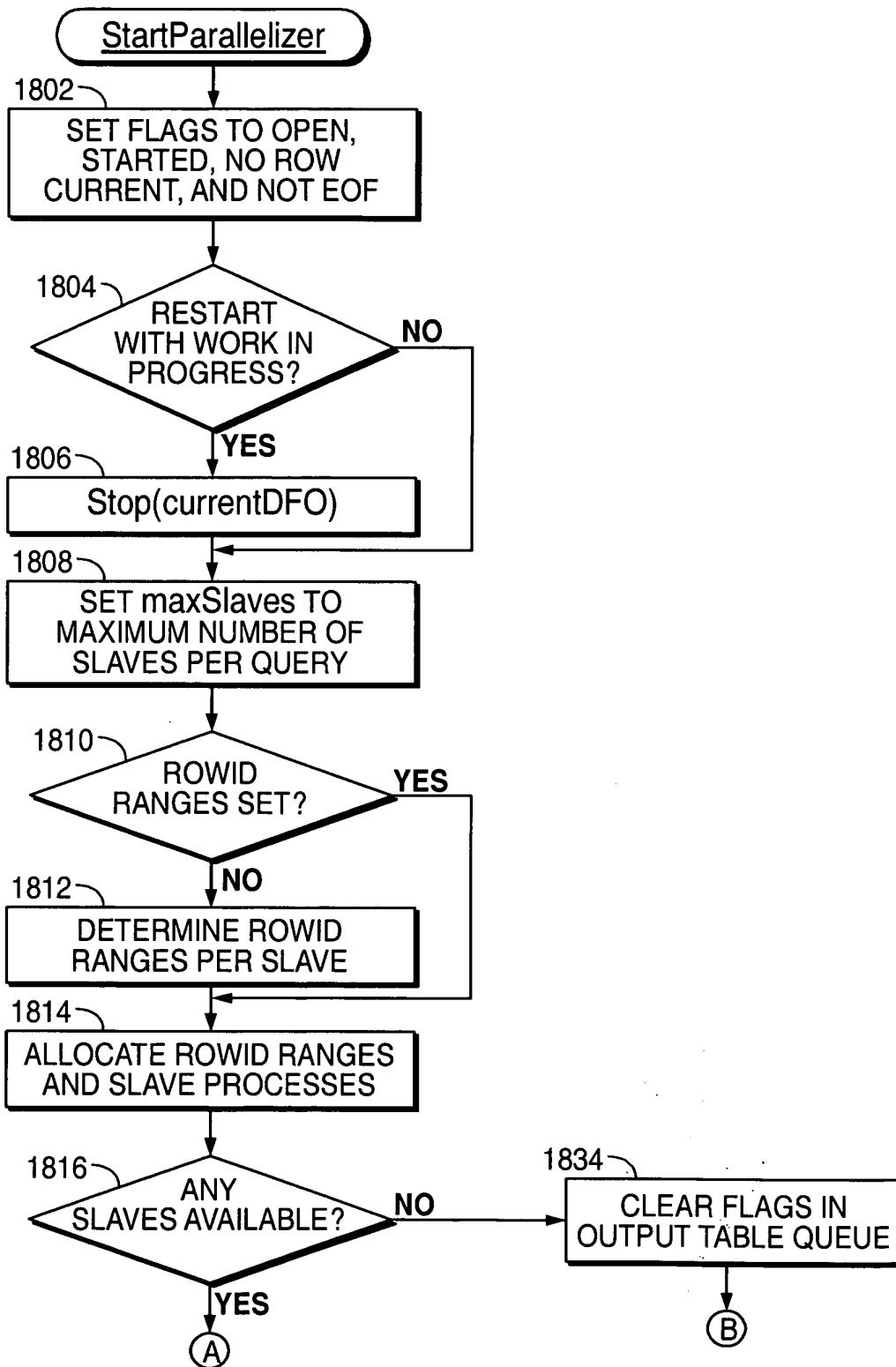
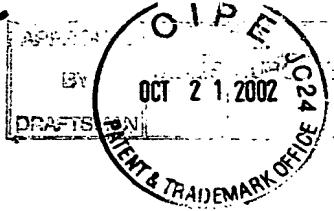


FIG. 18A



30/31

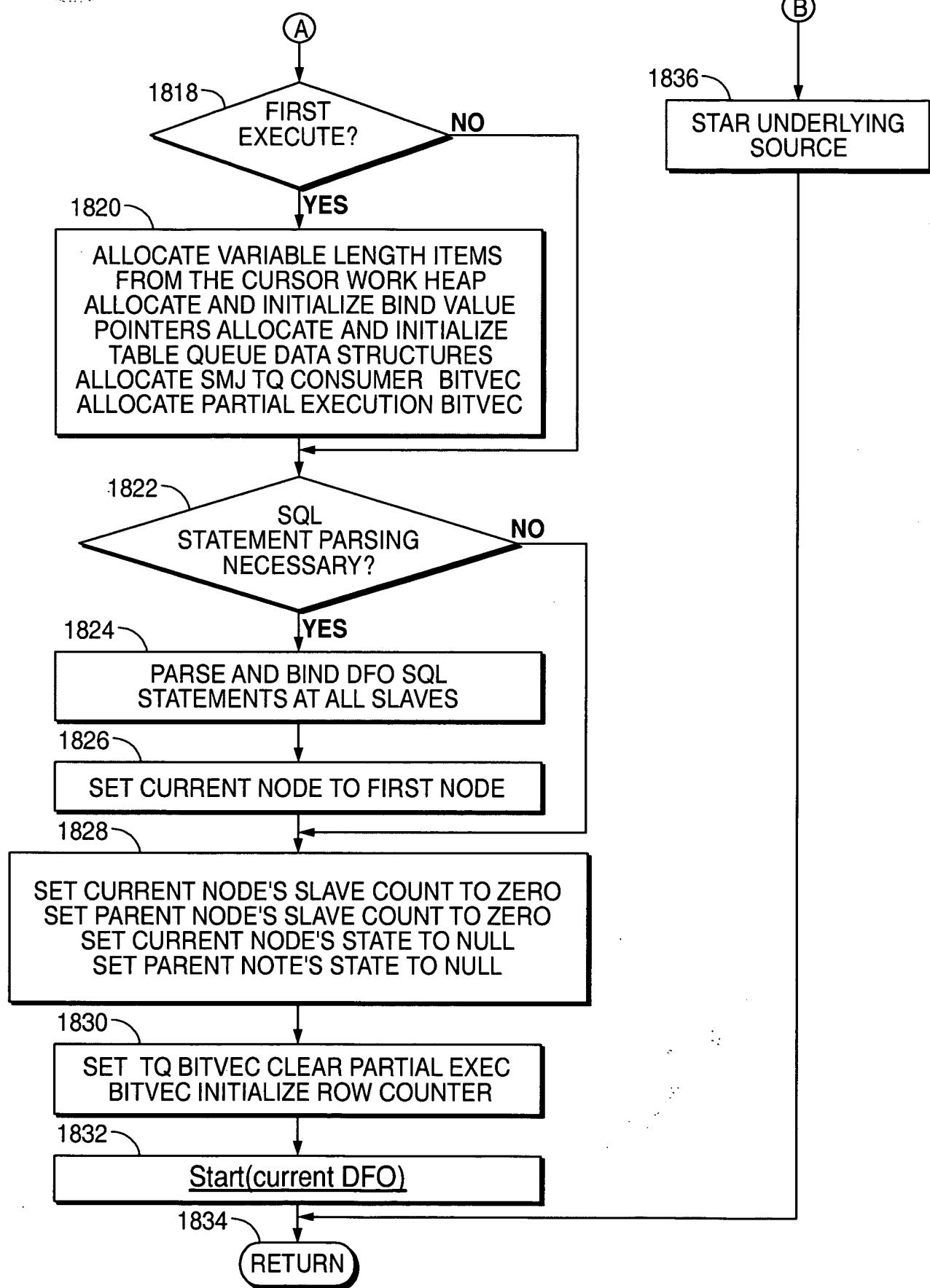


FIG. 18B



31/31

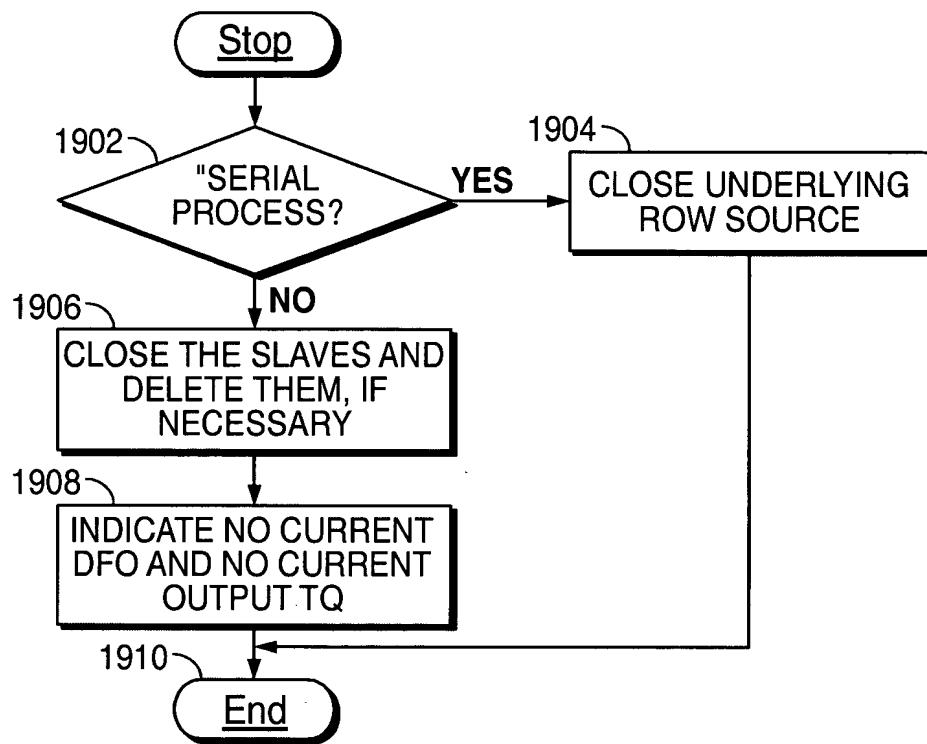


FIG. 19